DOCUMENT RESUME

ED 312 084 PS 018 370

AUTHOR Cummings, William K.
TITLE Low-Cost Primary Education: Implementing an Innovation in Six Nations.
INSTITUTION International Development Research Centre, Ottawa (Ontario).
REPORT NO IDRC-252e; ISBN-0-88936-482-6
PUB DATE 86
NOTE 137p.
AVAILABLE FROM International Development Research Centre, P.O. Box 8500, Ottawa, Ontario, Canada K1G 3H9 ($12.00 Canadian).
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Case Studies; Comparative Analysis; *Cost Effectiveness; *Delivery Systems; *Developing Nations; Educational History; Educational Innovation; Foreign Countries; *Primary Education; *Programed Instruction; *Program Implementation
IDENTIFIERS Bangladesh; Deschooling; *IMPACT Diffusion; Indonesia; Jamaica; Liberia; Malaysia; Philippines; Program Characteristics

ABSTRACT

The concept of Instructional Management by Parents, Community, and Teachers (IMPACT) was developed by the Regional Centre for Educational Innovation and Technology (INNOTECH) of the Southeast Asian Ministers of Education Organization (SEAMEO) in an effort to reverse trends toward increased costs and decreased student achievement in schooling in developing countries. In Southeast Asia, educators proposed to replace conventional educational components with programed instruction and learning, student and community volunteers, and instructional supervisors. In the comprehensive overview provided in this document, the history of the concept is examined by means of case studies of the implementation of the Philippines' IMPACT, Indonesia's PAMONG, Malaysia's InSPIRE, Jamaica's PRIMER, Liberia's IEL, and Bangladesh's IMPACT projects. National differences in degree of diffusion were shown to be related to the soundness of arguments presented on IMPACT's behalf, project organization, readiness for reform of the educational bureaucracy, consistency of leadership, and identification of an educational need that IMPACT could fill better than other groups. The document also traces the role of international organizations and associated individuals in promoting IMPACT, reviews related research, identifies site differences affecting implementation, and discusses 26 lessons derived from the case studies. References include 100 citations. (RH)

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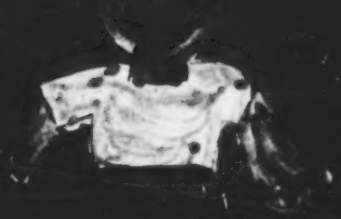

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Postal Address: P.O. Box 8500, Ottawa, Ont., Canada K1G 3H9

Cummings, W.K.

IDRC-252e

Low-cost primary education : implementing an innovation in six nations. Ottawa, Ont., IDRC, 1986. 126 p. : ill.

Educational innovations , primary education , low income , educational projects , non-formal education , developing countries — school-community relationships , self-help , parents , international organizations , IDRC , programmed instruction , project evaluation , comparative analysis , case studies.

UDC: 373.3.001.7

ISBN: 0-88936-482-6

Technical editor: S. Garland

A microfiche edition is available.

Il existe également une édition française de cette publication.

IDRC-252e

Low-Cost Primary Education

Implementing an Innovation in Six Nations

William K. Cummings

This work was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada. The views expressed are those of the author and do not necessarily represent the views of the Centre.

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Abstract

During recent years in several developing countries, cost of education has increased while average academic performance of pupils has often declined. IMPACT (Instructional Management by Parents, Community, and Teachers) was developed by a group of educators in Southeast Asia to reverse these trends. They proposed to replace conventional educational components with programed instruction and learning, student and community volunteers, and instructional supervisors. First launched in the Philippines and Indonesia, aspects of the new concept were subsequently introduced in Malaysia, Jamaica, Liberia, and Bangladesh.

The history of the concept is examined in these settings. National differences in degree of diffusion were shown to be related to the soundness of the arguments presented on IMPACT's behalf, project organization, readiness for reform of the educational bureaucracy, consistency of leadership, and identification of an educational need that IMPACT could fill better than other alternatives. Finally, 25 lessons are identified that should be of interest to several groups. These include educational planners seeking ways to reduce unit costs while enhancing educational quality; researchers involved in developing and evaluating new education delivery systems; educational administrators seeking to implement new programs; and donors committed to the support of educational change.

Résumé

Ces dernières années dans certains pays en développement, les coûts de l'éducation ont augmenté, mais le rendement scolaire moyen des élèves a baissé. IMPACT (Instructional Management by Parents, Community and Teachers) a été créé par un groupe d'éducateurs d'Asie du Sud–Est pour renverser ces tendances. Ils proposaient de remplacer les programmes et le personnel habituels de l'enseignement par un enseignement programmé, des élèves et des membres bénévoles de la communauté et des superviseurs de l'enseignement. D'abord lancé dans les Philippines et en Indonésie, des composantes du projet furent ensuite lancées en Malaisie, en Jamaïque, au Libéria et au Bangladesh.

L'étude porte sur l'historique de ce principe dans chacun de ces pays. L'étude donne comme raisons expliquant les différences de diffusion d'un pays à l'autre les arguments présentés en faveur d'IMPACT, l'organisation du projet, la disposition des autorités de l'éducation à effectuer une réforme, la cohérence du leadership et l'existence d'un besoin auquel IMPACT répondrait mieux que d'autres choix. Enfin, l'étude donne 25 leçons qui devraient intéresser plusieurs groupes dont les planificateurs de l'éducation qui cherchent des façons de réduire les coûts par élève tout en augmentant la qualité de l'éducation ; les chercheurs qui développent et évaluent de nouveaux systèmes d'enseignement ; les administrateurs de l'éducation qui veulent implanter de nouveaux programmes ; et les donateurs qui soutiennent le changement en éducation.

Resumen

En años recientes, varios países en desarrollo han sufrido alzas en el costo de la educación, en tanto que han visto disminuir los resultados académicos promedio de los alumnos. IMPACT (Instructional Management by Parents, Community and Teachers) fue creado por un grupo de educadores del Sudeste Asiático para tratar de contrarrestar estas tendencias. La idea es reemplazar los componentes educativos convencionales con instrucción y aprendizaje programados, estudiantes y miembros voluntarios de la comunidad y supervisores educacionales. Aplicado originalmente en Filipinas e Indonesia, algunos aspectos del nuevo enfoque fueron introducidos luego en Malasia, Jamaica, Liberia y Bangladesh.

Este trabajo examina la historia del enfoque en cada situación y demuestra que las diferencias en el grado de difusión se relacionan con la validez de los argumentos presentados a nombre de IMPACT, la organización del proyecto, el interés por reformar la burocracia educativa, la consistencia del liderazgo y la identificación de una necesidad educativa que IMPACT pudiera satisfacer mejor que otras alternativas. Por último, se identificaron 25 lecciones de interés para distintos grupos, entre ellos, los planificadores educativos que buscan reducir los costos unitarios y expandir la calidad docente; los investigadores interesados en desarrollar nuevos sistemas de enseñanza; los administradores que intentan poner en práctica nuevos programas; y los donantes comprometidos a apoyar cambios educativos.

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6

Foreword

In 1975, while working for the Ford Foundation in Indonesia, I first heard of Project IMPACT. The Director of the Ministry of Education's research and development centre, responsible at that time for some 15 million primary-school students, talked of an experiment being tried out in the Philippines and soon to begin in Indonesia that would increase the student–teacher ratio to 200 to 1 — an incredible innovation with the potential of saving a large percentage of Indonesia's education budget. Neither he nor I could then predict the dénouement of the story: how the oil boom would make such savings in Indonesia of little concern; how government regulations would make transfers of surplus teachers, resulting from altered ratios, almost impossible to carry out; and, more generally, how difficult it would prove to bring a pilot project to fruition in one country and to transfer it to another.

In 1976, the International Development Research Centre (IDRC) approved the first in a series of grants for IMPACT-style projects. Within the next 10 years, IDRC's investments in such projects in the Philippines, Jamaica, Indonesia, and Malaysia were to total over $2 million, and other donors would increase this total in Indonesia and in two other countries, Liberia and Bangladesh. In the early years of this innovation, IDRC actively promoted its dissemination; later, as the complexities of transferring such a "package" from one context to another became clear, this promotion became muted and was eventually replaced with the desire to understand better how innovations such as IMPACT are diffused, adopted, or adapted; how they evenutally fail or succeed, in whole or in part; how research does, or might, play a role in developing, testing, and disseminating such an innovation; and how donor agencies such as IDRC wittingly and unwittingly help or hinder such a process.

As a result of these questions, Professor William Cummings, aided by an international advisory group of individuals from the countries most involved with the IMPACT projects, was asked by IDRC to assess both the individual projects and the processes of innovation and dissemination that these projects represent. What follows is the result of this work. His report has been of use to IDRC in looking at its current activities in educational research and development; we hope it will be equally useful to researchers, policymakers, educators, and donor agency staff elsewhere in the developed and developing world.

Sheldon Shaeffer
Associate Director
Social Sciences Division
IDRC

Preface

Improving the quality of education at reasonable cost is possibly the greatest educational challenge faced by the leaders of developing countries. During recent years in a number of developing countries, the educational inputs — finance, teachers, and texts — have increased more rapidly than the number of places. While unit costs have thus increased, both retention rates and average academic performance of pupils have often declined. Education has actually become less productive while other sectors of national economies have increased in both output and productivity. Of course, educational expansion has often involved the establishment of schools in isolated areas where children are more widely dispersed, less exposed to the media, and come from homes where no adult can read or help with homework. Conventional education is difficult under these circumstances; hence it is not surprising that the conventional educational delivery system requires more resources per student as it expands into less developed areas.

But what would happen if a new approach were devised for these peripheral rural areas? Surely it is possible to design an approach that can deliver quality education at reasonable cost. This was the hope of a small group of pioneering educators who established and staffed a Southeast Asian organization, the Regional Centre for Educational Innovation and Technology (INNOTECH) during the early 70s. They devised an entirely new approach to rural education which, in its initial conception, differed in almost every fundamental respect with conventional education. Originally referred to as the "No More Schools" concept, it proposed to enhance educational quality by replacing schools, textbooks, teachers, and grades with alternative components. Relying on these new components, the experimenters hoped to increase radically the student–instructional supervisor ratio to upwards of 150 to 1, thus substantially reducing the unit cost of primary education. This concept, subsequently renamed Instructional Management by Parents, Community, and Teachers (IMPACT), utilized voluntary community effort, the inherent self-learning and teaching capabilities of children, and the new technology of programed instruction.

From 1974, the INNOTECH group began experimenting with the IMPACT concept in the Philippines and in Indonesia where it was modified and called PAMONG (Pendidikan Anak oleh Masyarakat, Orang tua Murid, dan Guru). In the words of Dr Pedro Flores, an IDRC program officer who provided the green thumb in these experiments, two seeds were planted in two different soils. Over subsequent years, the Philippine and Indonesian seeds grew and mutated in their respective ways.

Meanwhile, the original IMPACT concept acquired a reputation for successfully addressing the dual challenge of improving educational quality and

reducing cost, and new experiments were proposed for Malaysia, Jamaica, Liberia, and Bangladesh.

The documents outlining the second wave of experiments reflect the expectation that these experiments would easily prove successful, be acclaimed by national authorities, and be followed by rapid dissemination. The Liberian documents, for example, spoke in precise, quantitative terms of improving academic performance 50% while reducing the number of dropouts by 40% "at a cost commensurate with available resources" (Ellson et al. 1977:14–15). These were, however, unrealistic expectations based on a mistaken reading of the initial experiments. For, in spite of the great promise of the Philippines experiment, it was followed by a limited program of dissemination and several sites have now reverted to a conventional system. Thus, the path from experiment to institutionalization of the new delivery system did not prove as easy as was originally expected.

Nevertheless, in five of the six countries where the new concept was introduced on an experimental basis, some dissemination followed; indeed in four countries, dissemination has continued to the present and is quite extensive. Our rough estimates of the number of schools through 1985 that have adopted one of the many IMPACT-related delivery systems are 400 for Indonesia, 200 for Bangladesh, 40 each for Malaysia and Liberia, and 12 for the Philippines. Only in Jamaica was the project closed down following the original experiment. Thus it can be said that the IMPACT-related experiments have acquired an important foothold in the primary educational systems of most of the participating nations.

There are various reports on what has happened in specific countries, some of which are most informative. Of special note are Flores' (1981) *Educational Innovation in the Philippines: A Case Study of Project IMPACT* and the collection of essays on Manila's experience, *The IMPACT System of Mass Primary Education* (Socrates 1983). But there is no overview from a common perspective of what has happened in all six countries. There are a number of compelling reasons for undertaking a comprehensive overview:

(1) The deliberate formulation of a complex educational innovation, followed by rapid diffusion in a number of very different settings on an international scale, is virtually unprecedented. This unique event merits careful documentation.

(2) More generally, there are few accounts of the internationalization and indigenization of delivery systems of any kind, whether in education, irrigation, family planning, or some other area. This study contributes to better understanding of what transpires in such circumstances.

(3) The projects began from a common concept, at least in theory, but they developed a rich range of prototype delivery systems appropriate for a variety of difficult areas. It is helpful to identify these prototypes and their respective potentials.

(4) Extensive research was carried out in connection with these projects, but this research did not always have the intended result. Sometimes it was intentionally misinterpreted. Often it was completed too late and addressed the wrong issues. Given the concern with research, how might that research have been more effectively conducted and disseminated?

(5) The cumulative experience in six countries of moving from concept through experimentation to wider implementation and even nationwide institutionalization has provided a number of lessons that may be of use to countries that decide to attempt similar innovations.

The IMPACT story may be thought of as an outer cycle of conceptualization and international diffusion with six inner cycles of experimentation, implementation, and institutionalization. Chapter 1 summarizes the larger cycle, while chapter 2 provides a conceptual outline for examining the very diverse societies that have attempted IMPACT. Chapters 3 to 8 trace the several national experiences. Chapters 9 and 10 take up the technical issues of appropriate research and the reason for the divergent paths of the six projects. Finally, chapter 11 outlines several lessons suggested by the overall IMPACT story.

The original idea for this report came from IDRC as it was considering an evaluation of its past record in supporting educational development and research. The IMPACT experiments have received a substantial proportion of IDRC's education program budget; thus it seemed desirable to seek an independent view on the accomplishments of these projects. An international advisory group was contacted and invited to participate in an initial meeting in Singapore in August 1983. This group included Dr Augusto Tenmatay, Executive Director of the Educational Projects Implementation Task Force (EDPITAF) of the Philippines; Dr Moegiadi, Secretary of the Centre of Cultural Research and Development (BP3K) of Indonesia; Dr Atan Long, Professor of Educational Studies of Universiti Pertanian Malaysia; Dr Neville Ying, President of the Institute of Management and Production of Jamaica; and Dr. Othello Gongar, Deputy Minister of Education for Planning and Development of Liberia. Meanwhile, IDRC began searching for a consultant who had experience with educational research in third-world settings, a command of English and Bahasa Indonesia (which would be necessary for reading the relevant documents), and a critical understanding of research.

At the August 1983 meeting, the advisory group outlined goals for the review, devised a workplan, and approved my nomination by IDRC as chief consultant for the study. The proposed workplan involved at least 10 days in each country to visit the experimental sites, collect basic documents, interview as many people as possible, and solicit memos on key questions from knowledgeable participants. I was able to complete the fieldwork in three extended trips between August 1983 and July 1984. Following the field trips, I prepared a preliminary report which was submitted for review to the members of the advisory group, the directors of each of the projects, and other concerned individuals. Thus the report that follows has been reviewed by some 20 individuals who have extensive knowledge of these projects. The final responsibility for what follows, however, is my own.

The reader must be warned that this account is almost certainly influenced by my personal biases. I believe in the educability of all, and as individual learning patterns differ I believe that educators should try to accommodate these differences. I believe that there may be many ways to realize effective education, but public education has to be realistic about resources. Also, I believe that it is important when embarking on a project, especially one that affects the lives of children, to sustain the commitment until a clear verdict is reached. These are

some of the personal standards that have influenced my thinking as I have prepared this report.

I am immensely grateful to IDRC for creating the opportunity and to the many officials, researchers, teachers, and students in each of the six countries who have spared their valuable time to help me in this study. I hope this report justifies their confidence.

Part I
Getting Started

1

The International Network

Instructional Management by Parents, Community, and Teachers (IMPACT) is unique in two respects: (1) its conceptualization is the result of a regional organization established specifically to develop educational innovations; and (2) an international network introduced the concept to developing countries on three continents. IMPACT was proposed by the Regional Centre for Educational Innovation and Technology (INNOTECH) of the Southeast Asian Ministers of Education Organization (SEAMEO), 3 years after INNOTECH was founded, and was launched as a research experiment in two Southeast Asian settings soon after. The subsequent diffusion to new sites in the original countries and around the world has involved the International Development Research Centre (IDRC), the United States Agency for International Development (USAID), the United Nations Children's Fund (UNICEF), the World Bank, and private consulting firms.

In this chapter, I trace the role of international organizations and associated individuals in promoting IMPACT. While the IMPACT concept was developed by INNOTECH in reaction to its perception of the Asian educational condition, its development would not have proceeded as far nor spread so widely without the positive actions of the broader international network. It will not be possible to tell the full story of the international network, for much of it consisted of private and undocumented conversation, but it does seem important to explore the role of this network. While the purpose of this chapter is to highlight the crucial role of the network, I caution against the interpretation that the network intended or planned to promote IMPACT. The goals and interests of the various organizations and individuals in the network differ. In general, all reacted to the promise of IMPACT in terms of their own criteria. Largely by coincidence, they concurred in their respective conclusions that IMPACT was worthy of their attention and support.

The role of individuals in the international network cannot be over emphasized. Far more projects than development planners care to remember suffer a quiet burial once the original project money runs out. IMPACT would have been exceptional had it merely survived. That it not only survived but prospered and is being considered by several additional governments is clearly a result of repeated initiatives from a small group of well-placed individuals who have understood IMPACT's potential and have felt the system should be given a chance to prove itself. In this account, I stress the role of individuals as often as the role of the organizations with which they are associated.

International themes

As a background for considering the actions of the international organizations, it should be noted that all except IDRC had been operating in Asia for a number of years. The 1960s were the first U.N. decade of development and both the U.N. and the World Bank had already launched extensive programs throughout the region.

While the main thrust of international development thinking stressed economic policy and investments in agriculture and industry, Asian planners were expressing new interest in population control. Widely acclaimed family planning programs were ongoing in Taiwan and Korea, and by the late 60s Indonesia had begun to reverse its pronatalist position and Singapore had launched an ambitious family planning program. Governments were becoming aware of the relation between population growth and the increasing demand for government services, including schools.

Another emerging theme in development discussions was the value of education. Harbison and Myers' (1964) path-breaking study of the relation between educational manpower and economic development had been followed by Theodore Schultz's (1971) basic research on educational investment which emphasized the high returns from investment in primary education. Thus in development circles, there was growing recognition of the value of national support to education. It was from the mid-60s, for example, that educational loans were first offered by the World Bank. By 1970, 1% of all World Bank loans were for education; by 1983 the figure had risen to 5%.

While these development themes influenced the eventual founding of INNOTECH and hence IMPACT, the most critical reality was the geopolitical situation in Southeast Asia, especially American involvement there. In the early 50s, the United States had promoted the South-East Asia Treaty Organization (SEATO) as a regional organization to contain communism, but it never gained much momentum and, by the early 60s, was essentially moribund. Meanwhile, the United States was becoming increasingly entangled in South Vietnam and was seeking support for its efforts from governments in the region.

In the early 60s, most of these governments were reluctant to consort with the United States on any basis, recognizing that such cooperation could be construed as support for America's Vietnam policy. However, there were a number of critical changes in leadership from the mid-60s that fostered greater receptiveness to American initiatives. Ferdinand Marcos was elected President of the Philippines. General Suharto assumed the leadership of Indonesia, the Lee Kuan Yuew

became Prime Minister of the newly independent Singapore. While these leaders were not prepared to express their support through military involvement, they were sympathetic to some American foreign policy goals.

Recognizing the possibility for some mode of regional cooperation, President Johnson sent his special adviser, Eugene Black, to Southeast Asia in 1965 to discuss various alternatives. It was not long after Black's visit that SEAMEO was established to foster regional cooperation in areas of cultural and technical exchange. USAID provided generous support for the SEAMEO secretariat and responded on a case-by-case basis to the programs it began to organize.

SEAMEO, from the beginning, was determined to operate above politics. Membership was originally extended to all nations in the region, and all continue to be listed as members today, although Laos and Vietnam no longer send delegates or funds. In planning its programs and projects, the same concern to avoid politically sensitive areas is evident.

Eventually, SEAMEO authorized the establishment of six regional centres, each to have its headquarters in a different member state. Most of the proposed centres had a narrow focus, such as tropical agriculture, or English-language education. INNOTECH was the last of the proposed centres, with a mandate much broader than the others. Its responsibilities included the following:

- Create and develop new approaches to education particularly suited to Southeast Asia but deriving ideas from all possible sources;
- Supply a broad range of facilities and professional resources and provide an environment where selection, development, and testing of potentially valuable innovations can take place;
- Promote and undertake research and experimentation to deal with common problems identified within the region, leading to the creation of prototype solutions that can be tested and adapted in the member countries; and
- Train selected, key personnel from member countries through training courses, workshops, and seminars.

INNOTECH's first years

It is obvious that, from the outset, INNOTECH intended boldly to challenge conventional education. One example of this early spirit is an address delivered by Robert Jacobs, USAID's regional adviser for Southeast Asia, at a planning session for the new centre (Jacobs 1967):

> The stark fact is that the kind of problems faced by educators in developing countries in the world as it is today can never be solved by traditional approaches . . . But these problems are in a sense self-imposed. They are problems simply because educators in these countries insist on traditional classrooms with standard equipment, on the goal of having a qualified teacher for each 35 students, on the bound textbooks that are costly to produce and difficult to keep up to date, on the instructional methods whereby one student performs while his classmates sit idle and passive, and all the other outmoded features that the countries which are exporting educational expertise are trying to replace in their own educational programs.

A second planning meeting was held in mid-1969 in American Samoa, an area that was pioneering in radio- and TV-mediated distance learning techniques. The participants at this meeting decided against emphasis on these media, in part because they believed the maintenance problems would be insurmountable in many parts of rural Asia. Instead, attention turned to ways of reorganizing the routine of school life. On one day, the participants were introduced to the highly rationalistic logic of systems analysis and, on the next, to Ivan Ilich's "No More Schools" philosophy (Ilich 1970). Both of these seemingly contrasting approaches made a significant impression and were eventually incorporated into the INNOTECH program.

Vietnam was the intended location for INNOTECH, but due to the unsettled circumstances there, temporary quarters were set up in Singapore in 1970. Ly Vanh Duc, a senior Vietnamese educational official, was appointed as the first director, and Winarno Surachmad of Indonesia as deputy director. The leadership immediately initiated a 10-month intern program and a 3-month training course stressing the systems approach to educational problem solving. To obtain assistance in conducting the course and exploring potential areas for research, INNOTECH appealed to USAID for technical assistance and a contract was issued to the American Institutes for Research (AIR). Jerry Short and Donald P. Horst were on site as full-time consultants by 1970 and Douglas Ellson joined them in 1971. Their places were later taken by Michael B. Nathenson, Sheldon Sofer, and Daryl G. Nichols. The intern and training programs impressed the INNOTECH board who approved their expansion in the second year.

In its third year, INNOTECH began to place greater emphasis on the development of a research program, one aspect being an English listening comprehension program that had special utility for preparing trainees for their involvement at the centre. But certainly the most important activity of the third year was a small experiment launched by Douglas Ellson at Pontian, a rural community 25 km up the Malay peninsula from Singapore. Ellson, one of America's pioneers in the development of programed instruction, sought, in this experiment, to devise programed teaching materials to enable untrained teachers to improve the Malay language reading and writing proficiency of rural school children. While the experiment was small in scale and limited to first graders, key INNOTECH staff concluded it had achieved impressive success.

At a February 1973 regional seminar, *Approaches to Effective and Economical Delivery of Mass Primary Education*, Ellson's experimental results were featured alongside various other approaches being considered in the region (INNOTECH 1973a). The conference proposed that INNOTECH design a new delivery system for experimentation in the region. Daryl Nichols, now on the INNOTECH staff, joined Ellson, Deputy Director Winarno Surachmad from Indonesia, and Orlando Claveria of the Philippines for 2 months of intensive discussions, the immediate outcome of which was the plan to combine elements of the Pontian experiment in a "No More Schools" concept that would guide experimental efforts in Naga, the Philippines, and Solo, Indonesia. A technical proposal outlining the concept was submitted to IDRC and other donors during the summer of 1973.

The "No More Schools" concept

The "No More Schools" concept had two parts: a rationale outlining basic assumptions about the educational condition in Southeast Asia and a list of components that could be incorporated into a new system for the delivery of education.

Rationale

One-half of rural children in Southeast Asia do not complete more than 4–5 years of school and, due mainly to a projected rapid population growth rate, this situation is likely to worsen. Shortage of classrooms, considered one of the major causes of the low educational attainments of rural youth, is unlikely to improve because overstrained national education budgets will not be able to fund many new places at existing unit costs. The inflexibility of conventional school schedules, which causes children to miss lessons, fall behind, and eventually drop out, is another reason for low educational attainment.

Thus, to improve rural education, a new delivery system needs to be devised with a more flexible schedule and lower unit costs. Since teachers make up 80–90% of unit costs in conventional schools, such costs can be reduced by increasing the student–teacher ratio and supplementing teacher supervision with assistance from students, parents, and community resources. Self-instruction, relying on programed instructional materials, can be another means to reduce costs and, moreover, enable greater flexibility in scheduling individual learning.

Components

While early documents did not spell this out, INNOTECH decided that the actual delivery system had to be developed in the field; at the prefield stage only the broad outlines, or components, of the prospective delivery system were indicated. These components can be grouped as follows.

Personnel

- In place of the conventional teacher, an instructional supervisor able to manage up to 200 primary students;
- Community members, enlisted on a voluntary basis, to provide instruction in particular life skills;
- Primary-school graduates, provided modest pay, to give courses in reading and other academic subjects;
- Parents to take responsibility for motivating their children and monitoring their progress.

Instructional materials

- The use of modular instructional materials, with many of these materials being self-instructional to allow children to proceed at their own pace;
- Instructional radio program sessions to supplement the written material.

Instructional organization

- The primary mode of learning was to be self-paced, individual instruction under the guidance of tutors and the instructional supervisor. This mode could be supplemented, where appropriate, with group sessions;
- A simplification of organizational procedures with no specific age required for entry to the community centre, few set class periods during the day, no prescribed schedule for completing modules, and no individual grades maintained other than a record of completed modules.

The promotion of the "No More Schools" concept was an outcome of the peculiar and very particular influences that INNOTECH had experienced in its short history. The concept's rationale built upon developmental notions about large populations in rural areas, a faith in education, yet also a concern to avoid excessive expenditures on rural education. It reflects a fascination with Ivan Ilich's neo-Marxist deschooling philosophy (Ilich 1970), yet several of the governments supporting SEAMEO were staunchly opposed to Marxist ideas. The "No More Schools" concept confidently, but mistakenly, assumes that community educational resources are available and can be easily mobilized. Over the long run, perhaps the most controversial feature was the faith in programed instruction. Any one of the concept's peculiar assumptions could have been challenged, but surprisingly, once developed by the technical working group, they received little criticism either from INNOTECH or the SEAMEO board.

Support from IDRC

Donald Simpson of IDRC was designated as program officer for reviewing this proposal, and it was at this stage that Ruth Zagorin, then Director of Social Sciences at IDRC, became involved. IDRC's initial reaction was positive, but it urged another regional conference to discuss various aspects of the proposal.

Later in 1973, concurrent with the move of INNOTECH headquarters to Saigon, an inaugural regional seminar was held on the *Use of Community Resources in Providing Low Cost Primary Education* (INNOTECH 1973c). Simpson, of IDRC, delivered a key address extolling many aspects of the INNOTECH proposal but critical of the idea that schools should be abandoned; he questioned the appropriateness of this in a Southeast Asian context where teachers were highly revered members of local communities and where governments looked to schools as essential vehicles in nation building. His arguments were seconded by many of the other participants, and the conference concluded by changing the name of the experiment from "No More Schools" to IMPACT, an acronym for Instructional Management by Parents, Community, and Teachers. The physical unit for the delivery of education was to be called the community learning centre.

While this conference was important in modifying the confrontationist, ideological tone of the proposal, it did not lead to significant changes in the actual concept proposed by INNOTECH. Moreover, IDRC had already informally agreed to support the experiment for 3 years. Following the conference, the formalities of support were arranged, and INNOTECH proceeded to complete its arrangements for the management of the two experimental sites.

What actually transpired at these sites is taken up in greater detail later. Here the intention is to focus on the intersection of these sites with the regional and international actors.

From concept to research

One very obvious international factor influencing the direction of the experiment was the precariousness of the political situation in and around Saigon in late 1973. If conditions had been more predictable, a nearby site would have been selected for fieldwork. Under the circumstances, however, sites were sought that were conveniently accessible from Saigon by air, but in more politically stable countries. Other criteria included a low rate of primary school attendence and an agricultural economic base.

In late 1973, INNOTECH appointed two of its senior staff members as prospective project director and project associate, on the assumption that the experiment would be directed from Saigon. However, objections to this procedure, especially from Indonesia, resulted in the decision to appoint on-site project directors and associates. In the case of the Philippines, these local managers reported directly to INNOTECH-Saigon whereas in Indonesia they reported through the Center for Innovation of the Ministry of Education and Culture to Saigon. Thus from the beginning, Indonesia was most emphatic that the Indonesian side of the experiment would not be run from outside, but rather would be under local authority. Indicative of this modification was the Indonesian decision to refer to its project sites as PAMONG (Pendidikan Anak oleh Masyarakat, Orang tua Murid, dan Guru, the Indonesian translation of the words making up IMPACT) primary schools rather than community learning centres.

With these administrative modifications, the staff at INNOTECH-Saigon came to assume the role of technical advisers. Michael Nathenson was actually posted to the Philippines sites and Douglas Ellson to the Indonesia site to provide 2 months of technical assistance in organizing learning objectives and writing modules. Also during the early months of the experiments, either Daryl Nichols or INNOTECH Director Ly Vanh Duc traveled roughly once each month to the two sites to provide suggestions on overall organization and strategy. Their advice seemed to carry heavier weight in the Philippines than in Indonesia. Donald Simpson, in his role as program officer for IDRC, also made trips approximately every 3 months from his Ottawa office to the two field sites.

Changes at INNOTECH and IDRC

From June 1974 in the Philippines and September 1974 in Indonesia, the first groups of children were exposed to the new experimental conditions. Meanwhile, the political situation in Saigon was becoming increasingly precarious and, in May 1975, INNOTECH's board of directors appointed Dr Orlando Claveria as officer-in-charge of INNOTECH responsible for its move to temporary quarters in Bangkok. Meanwhile, the board sought and obtained permission from the Philippines government for INNOTECH headquarters to be located there. By mid-1976, Dr Claveria and the technical staff were once again resident in a new country.

The propinquity of the INNOTECH staff to the Naga site inevitably led to a closer monitoring of activities there than in the Indonesian experiment. Daryl Nichols actually moved to Naga for 6 months in 1976–77 to assist the project director, Rosetta Mante, in devising and supervising a workplan for replacing the subject-based modules with an integrated format.

Another important development was the decision by IDRC to decentralize its operations. Regional offices were set up in Singapore for Southeast Asia, and in Dakar for Africa. Dr Pedro Flores, former Dean of the College of Education at La Salle University in Manila, was appointed educational program officer for the Southeast Asian Office. Dr Flores developed a keen interest in the IMPACT and PAMONG experiments, was a frequent visitor at both sites, and came to play a particularly influential role in the promotion of IMPACT, both internationally and in several of the national settings.

Soon after Dr Flores joined IDRC, the original grant to INNOTECH was scheduled to expire; thus one of his early tasks was to explore the possibility of an extension. While IDRC-Ottawa was sympathetic to modest additional support, it also began to articulate the position that it saw its role more as one of enabling new ideas to get started than as one of seeing them to the finish. The expectation was that other actors, with bigger budgets, would undertake this latter function. Unfortunately, by the late 70s, most donor budgets had suffered cuts, and IMPACT faced an uphill struggle to find a new source of support.

In the Philippines, as we see in chapter 3, extensive documentation indicating IMPACT's merits and its energetic promotion by project staff made it appear at one point that IMPACT would be included in a new World Bank loan. But a change in administration at the Ministry of Education negated that linkage.

In Indonesia, meanwhile, while other donors initially expressed little interest, there eventually was an embarrassment of riches. USAID decided to provide very generous support for a tryout of the original PAMONG model in Bali, and UNICEF agreed to support a new model appropriate for the small schools of Kalimantan. The major initiative in securing this support came from the Indonesian Ministry of Education, but with essential backup from IDRC's Singapore office. In the UNICEF grant, program assistance was to be provided mainly by resident UNICEF staff. In the case of USAID, a contract was secured by the Institute for International Research (IIR), an offshoot of the American Institutes for Research (AIR), the same organization that initially had assisted INNOTECH. Daryl Nichols was made project director, and Dean Nielsen, who formerly had worked as a United Nations Educational Scientific and Cultural Organization (Unesco) consultant in Indonesia, was made resident chief of party and was joined by Doran Bernard, an American graduate student.

The move to Malaysia and Jamaica

Anticipating that the central office of IDRC would be interested in sponsoring the diffusion of IMPACT, Flores was on the lookout for new Asian sites. Responding to an initiative from Hulman Sinaga, a Malaysian lecturer who had visited IMPACT, IDRC approached the Malaysian Ministry of Education's Director General, Tan Sri Hamdan Tahir, who subsequently developed a keen interest in the project and approved preliminary work on a proposal. The work was facilitated by

IDRC funding for a visit by a Malaysian delegation to the Philippines and Indonesian sites. Soon after, Hamdan completed his tenure at the Ministry and was appointed Vice-Chancellor at Universiti Sains Malaysia (USM), the very university where Sinaga was employed. Hamdan thus urged IDRC to award the project to USM with Hulman as project director. Thus Project InSPIRE (Integrated System of Programed Instruction for Rural Environment) was born.

Ruth Zagorin, head of the Social Sciences Division in the Ottawa office of IDRC, facilitated the introduction of IMPACT in Jamaica. In 1977, Zagorin visited Jamaica and learned from Dr Errol Miller, Professor of Education at the University of the West Indies, that IDRC had never sponsored an educational project in the Caribbean. As Zagorin explained the concepts of IMPACT, it became clear that rural Jamaica shared many of the characteristics that had made IMPACT so attractive in Southeast Asia, and interest quickened. While nothing was settled in this chance encounter, the seed was planted. Some months later, IDRC sponsored a delegation of five Jamaican educators including Eric Bell, then Minister of Education, to visit the two original Southeast Asian sites. Soon thereafter, Jamaica presented a proposal to IDRC.

The Malaysian and Jamaican proposals were somewhat different from the original INNOTECH proposal in that they focused on improving the quality of rural education, but not on lowering costs. Also, the only technical assistance included in the proposals for these new sites came from the original Southeast Asian sites. It was assumed that by this time the IMPACT technology had been adequately proven and hence could be easily exported. This second wave of countries was believed to have a large reserve of trained and capable educators who could advance such a project to completion.

While the scale of these later projects was more modest, they still commanded nearly half a million Canadian dollars each from IDRC's budget. Soon after IDRC approved the Jamaican grant, Zagorin resigned to move to Washington. Her successors in the Social Sciences Division felt that IDRC should be involved in a greater variety of educational activities. Given a limited budget for education, their involvement in high-cost development projects such as IMPACT would restrict their efforts to a maximum of two or three projects. Also, IDRC began to conclude that its comparative advantage was more in the area of research than development. Thus, these large development-oriented grants came to be viewed more critically. The flame of IMPACT began to flicker, at least in Ottawa.

Project settings and diffusion

Chapters 2 to 8 provide extensive detail about each project. At this point, I note a few differences in the settings of these six experiments, differences that have a bearing on the story of international diffusion.

First is the question of why the Philippines' IMPACT has tended to be the showplace among the experiments. Far more has been written in English (a major international language) about the Philippines' IMPACT than any of the other projects, prospective leaders from each of the subsequent projects have visited the Philippine project, and each of the subsequent projects has received technical assistance from individuals who were once part of the Philippine project staff.

One obvious reason is that INNOTECH was finally located in the Philippines and found it easier to promote the nearby example. Virtually every visitor to INNOTECH is taken to one of the IMPACT sites for a field visit in the normal course of INNOTECH training and hospitality. While the Philippine experiment received an intensive dose of foreign technical aid in the beginning, afterwards it was mainly on its own and, thus, perhaps appeared more authentic. Partly due to this early aid, the Philippine project was the quickest to develop and the first to publish results indicating success. Also, the Philippines IMPACT stayed closer to INNOTECH's original design.

In later years, as subsequent chapters indicate, there has been relatively little development of IMPACT in the Philippines. As a result, many of those who were instrumental in its early success found little stimulation at home, and several have volunteered to go overseas to promote the IMPACT idea. Several served as short-term consultants, Aida Pasigna and Rebecca Belleza joined the project staff in Liberia, and Dr Claveria assumed the position of consultant and then project leader in Bangladesh.

Relative to the Philippines, the Indonesian experiment has not been as widely publicized. Yet it also has had a profound international influence, partly through acquainting several expatriate aid officers and consultants with the experiment who later moved into influential positions. Of the four countries considered thus far, we should appreciate that Indonesia in the mid-70s was certainly the least developed, and at the same time the recipient of the largest amount of foreign aid. Moreover, a relatively large share of foreign aid was going into the educational sector. One consequence was that PAMONG had to compete with other educational development projects for scarce local talent; partly for this reason, it developed more slowly than in the Philippines where IMPACT, at least for a time, was the main new thing.

One consequence of the extensive foreign aid in Indonesia was the presence of numerous foreign program officers and technical assistants. In Indonesia, the foreign advisers occasionally would meet and exchange information about their work and, in this way, news about PAMONG spread. The eventual direct support of PAMONG by three different donors was an outcome of a consensus among the Indonesian-bases expatriates concerning the relative merits of PAMONG vis-à-vis other ongoing local experiments: it seemed to work, had the backing of key ministry people, and was directed to the poorest of the poor.

Many of Indonesia's foreign advisers were committed to a career in educational development, and in several instances the news they carried about PAMONG influenced their conduct at their next post. Among these, for example, was Sheldon Shaeffer, then responsible for the educational programs of the Ford Foundation's Indonesian field office, and now Associate Director of the Social Sciences Division in charge of education for IDRC. Nat Colleta, now in the World Bank, was with USAID in Jakarta during that period. Dean Nielsen, currently IDRC's Southeast Asia resident educational program officer, worked for Unesco in Indonesia in the mid-70s, and subsequently returned on a USAID contract to assist Project PAMONG. Finally, Nepal's current interest in the IMPACT approach is in part due to the favourable comments of N. Gautan, a Nepalese citizen who was UNICEF's program officer for education in Jakarta through 1980.

Liberia and Bangladesh

By the late 70s, IMPACT was already well known in educational development circles. Several brochures had been prepared as well as two documentary films and IMPACT had been discussed at two of the Bellagio conferences of donor agency education officers. Moreover, many of the technical advisers associated with the birth of IMPACT had moved, with an especially large concentration at USAID in Washington and the World Bank.

The widespread faith in IMPACT seems to have been a major factor in its spread to Liberia. After decades of neglecting education, the Liberian government, from the mid-70s, began asking for guidance. A major assessment was completed in 1977 and discussions began with USAID to initiate action addressing educational problems in rural areas. One of the members of the Liberia USAID mission had recently been transferred from Bangkok and had some familiarity with PAMONG. Discussions with USAID in Washington led to the proposal that Liberia send a mission to review the Southeast Asian experiments. Upon their return, serious discussions began about a grant, and a tender for technical assistance was eventually won by the Institute for International Research (IIR). Three of the individuals who had been in on the ground floor of INNOTECH came to play key roles in the Liberian experiment, namely Douglas Ellson, Daryl Nichols, and Robert Jacobs. Also, two people who had worked on the Philippine project were recruited for technical roles. And in the final stages, the Liberian project recruited Doran Bernard, who had spent 3 years as technical adviser on the USAID-supported PAMONG expansion in Bali, Indonesia.

IMPACT's diffusion to Bangladesh was even simpler. From early 1980, the World Bank began local discussions on a loan to improve primary education, especially in rural areas. The Bangladesh authorities did not have fixed ideas about their needs, but were thinking mainly of improvements in existing facilities. However, the need for cost reductions was obvious; thus when David Hopper, the World Bank's Vice-President for Southeast Asia and former President of IDRC, suggested that an experiment in low-cost education might be included, this was readily incorporated. It is not surprising, given Mr Hopper's familiarity with IMPACT from his IDRC days, that an IMPACT-like experiment was ultimately proposed. The initial contract for this experiment was again secured by IIR, and once again several of the early INNOTECH actors were recruited: Daryl Nichols became project director, and Orlando Claveria and Winarno Surachmad joined as resident advisers.

Philosophies of assistance

At the beginning of this chapter, I emphasized that the international network was not a tight cohesive entity, but rather was composed of a variety of organizations and individuals with distinctive goals and interests. When it came to the actual funding of IMPACT, IDRC was the principal external funding agent for initial stages of the experiments in the Philippines, Indonesia, Malaysia, and Jamaica. In later stages and in Liberia and Bangladesh, other donors were involved, most notably USAID and the World Bank.

It is important to appreciate the distinctive philosophies of assistance of these several donors. USAID has been involved in educational development for a longer time than the other donors. Depending on circumstances, it provides assistance as a loan, a grant, or some combination. USAID receives its funding from the U.S. Congress. While in the early postwar period Congress extended considerable discretion to American technical assistance, it gradually has come to view aid as an extension of American national interest and has sought increased accountability for the use of funds. Thus, in the development of projects, USAID officers normally take charge of the investigative work and the preparation of proposals. The proposals lay out a detailed plan of work with precise goals and timetables. Execution of projects is entrusted either to the local government or to contracted firms. The USAID office monitors the project to see that it conforms to the preestablished plan in terms of the use of funds, adherence to schedule, and achievement of goals. The USAID approach is concerned with getting things done according to a plan devised by USAID officers. The process is relatively insensitive to local circumstances and relatively intolerant of the unexpected.

The World Bank moved into educational development after USAID and has been interested mainly in funding buildings, textbooks, and equipment. Its assistance is always in the form of loans. Usually World Bank loans are managed by the receiving governments, who may contract out certain parts of a project to local or international suppliers. Because basic research and experiments like IMPACT are only rarely part of World Bank loans, bank officers devote little attention to them. On the other hand, local government officials may be keenly interested in these components.

IDRC was established in 1970 by the Canadian parliament for the specific purpose of supporting research designed to adapt science and technology to the needs of developing countries. Reacting to what it perceived as the overly directive and heavy-handed approaches of other donors, IDRC usually announces program areas, then solicits proposals from Third-World actors. IDRC evaluates these proposals in terms of quality and promise, and selects a small number for sensitive and tolerant support. IDRC officers periodically visit the selected projects and share their reflections with project staff. However, IDRC officers generally avoid second-guessing the project staff or offering unsolicited advice.

These differences in philosophy were apparent in the approach of each of these donors to IMPACT and had some bearing on what transpired. We return to this theme in chapter 10.

Conclusion

This chapter began by pointing out the uniqueness of INNOTECH as a regional organization intended specifically for the promotion of educational innovations, and also the effectiveness of the international network in diffusing the IMPACT innovation so widely. Other educational ideas, such as emphasis on nonformal education and the use of radio and television in instruction, have also been widely diffused by international networks. At least at first glance, what stands out in the IMPACT case is the complexity of the original idea and the fact that it was intentionally conceptualized and promoted by the Third-World organization. Of course, when the IMPACT case is carefully examined, it is apparent that non-Third-World people had a major role in its conception and diffusion and that it has

acquired remarkably different characteristics as it has been adapted to each new national context. Still, IMPACT has a certain identity, almost spiritual in quality, that other innovations do not command. Perhaps for that reason it continues to excite interest, even as other ideas are forgotten. I suspect that the idea of IMPACT will live long after the reality has disappeared, serving as an important stimulus to those who plan the organization of schools.

In view of IMPACT's vitality, it is of some concern that it has not been followed by other concepts of similar power. INNOTECH has not been able to conceptualize a major innovation since IMPACT. The international network we have described has been creative in fostering modifications of the original IMPACT idea that are responsive to indigenous conditions. However, it has not been able to move beyond the IMPACT framework to identify and promote such fundamentally different ideas as, for example, a new approach to linking high schools and work organizations or a new model for nonformal education. Apparently, in more recent years the international network has decided that the active promotion of ideas such as IMPACT is a form of coercion, a new mode of cultural imperialism. Also, many in the network that fostered IMPACT later decided that the developing world was exposed to too many bright ideas too few of which had proven effective. So the emphasis changed. Many who were involved in the excitement of IMPACT worry about this shift in emphasis at the international level.

2

Introducing the Case Studies

The IMPACT concept was introduced to educators of six different nations. But from this common idea emerged six different outcomes. Identifying the forces in the respective national settings that account for these different outcomes is the major analytic task of this study. As a first step, in chapters 3–8 I will present case histories of the respective national experiences. In this chapter, I wish to outline the main themes that will be taken up in the case histories.

The six nations are different

The six countries to which the IMPACT concept has traveled thus far are immensely varied. Located on three continents, they range in population from Indonesia, which is the world's fifth most populous country, to Jamaica and Liberia, two of the smallest. In wealth, they range from Bangladesh, which is one of the world's poorest countries, to Malaysia, where the per capita income approaches that of several southern European countries. Table 1 summarizes key demographic and socioeconomic indicators for the six countries.

All of the countries are predominantly rural with economies highly dependent on agricultural production. Population growth and density were two of the features mentioned in the original IMPACT rationale. All of the countries, except Jamaica, have high rates of population growth. However, they vary widely in terms of population density, from Bangladesh, possibly the world's most densely populated country, to Liberia, which is among the most sparsely populated. Similarly, the countries vary widely in terms of enrollment ratios, level of teacher training, student–teacher ratios, and primary-school completion rates. In general, the educational conditions of the late-comers are much inferior to those of the pioneers and much closer to what was described in the original IMPACT rationale.

Table 1. Selected socioeconomic and educational indicators

Indicator	Philippines	Indonesia	Malaysia	Jamaica	Liberia	Bangladesh
Population (millions)	49	146.6	13.9	2.2	1.9	88.5
GNP per capita (USD)	690	430	1620	1040	530	130
Population density (100/km^2)	163	76	42	200	17	615
Population growth rate 1970–80 (%)	2.7	2.3	2.4	1.5	3.4	2.6
Rural population (%)	64	80	71	59	67	89
% GNP for education	2.8	2.4	6.7	9.9	3.1	1.2
Primary enrollment pop. 60	95	71	96	92	31	47
Primary enrollment pop. 80	98	94	93	99	67	65
Tertiary enrollment pop. 60	13	1	1	2	0.2	1
Tertiary enrollment pop. 80	27	3	3	3	—	2
Rural primary teachers trained (%)	80	60	70	60	30	60
Primary student–teacher ratio	31	32	32	39	54	48
Estimated average salary primary teacher (USD/month)	125	50	500	150	250	30
Primary completion rate (%)	65	48	93	52	30	—
Primary unit cost (USD)	50	40	107	76	128	13
Literacy rate (%)	83	57	58	90	25	26

Source: World Development Report, 1980 (World Bank 1981).
Note: GNP = gross national product, USD = United States dollars.

The late-comer effect was not influential

Some theorists argue that late-comers to development have an easier time than pioneers, as they can avoid the mistakes of the pioneers. In the case of IMPACT, the later countries did accrue some advantages. As IMPACT proved itself viable in the initial countries, its reputation was available as an added premise in defending the project against local critics. Also, the later countries were able to recruit consultants who had experience in the earlier projects. However, apart from these two advantages, the late-comers faced most of the same challenges encountered by the pioneers. They had to develop a prototype suitable to their national circumstances, they had to develop new materials and a procedure for introducing the delivery system at new sites, and they had to advocate wider dissemination of the delivery system to local audiences.

The national experiences followed a common sequence

Most of the national experiences can be conveniently divided into two stages, an experimental stage to develop a national prototype(s) and subsequent steps to institutionalize the prototypes in the national educational system.

In most of the countries, four more or less sequential phases evolved during the experimental stage:

(1) *Preparation* Possibly the most important phase was preparation, including initial evaluation of the IMPACT concept and decisions that went into the first proposal or contract.

(2) *Starting up* Next were the activities involved in starting up, including recruiting personnel, preparing instructional materials, training instructional staff, and establishing relations at the sites.

(3) *Into the schools* Often before the starting up phase was completed, the new system was introduced into a group of experimental schools.

(4) *Evaluation* As the experiment advanced, evaluative exercises were performed to develop a basis for improving the system and or making a decision on expansion. Influencing these decisions was the performance of the experiment in terms of developing prototypes that were innovative, educationally effective, potentially cost saving, and capable of reaching groups that conventional delivery systems were not adequately serving.

In the latter stages of five of the six experiments, sufficient momentum had been achieved to consider diffusing the local prototype to new schools and or for new uses. Only in Jamaica did the responsible people decide to close down at the end of the experimental stage.

In most of the cases, there was not sufficient evidence to say that the prototype delivery system was superior to the conventional system. Still, there was a sentiment that the prototype looked promising and might at least complement the conventional system.

Given this sentiment, what next? As the local and international promoters sought to institutionalize the innovative prototypes, they ran up against resistance from entrenched interests that sought to preserve the conventional system. The success of the several prototypes in their respective journeys toward institutionalization depended as much on the political skill of their advocates in addressing the forces of resistance as on the objective merits of the innovations.

The outcomes were different

It is useful to distinguish two different types of outcome generated by the IMPACT experience, those that occurred during the experimental stages and those that occurred once national efforts shifted toward institutionalization. Concerning the experimental stage, most visible among the outcomes were the respective national prototypes. Drawing on the analytical structure proposed by INNOTECH, the major characteristics of these prototypes are summarized in Table 2. While IMPACT began as an innovation to reduce costs, it can be seen by glancing across the first row that only three of the national projects firmly aligned with this goal. As IMPACT evolved, a variety of other characteristics gained salience.

Those prototype characteristics which potentially differed from conventional schools are listed down the left column. Thus to the extent a national prototype has many of these characteristics (i.e., many yeses) it can be said to be more innovative. The Philippines' prototype was certainly the most innovative, closely followed by Indonesia and Liberia. Innovation was less evident in Malaysia and Jamaica where the projects were reluctant to alter the teacher role. Bangladesh followed the Philippines in most respects except that nationwide texts were not replaced by modules. Distinct from the relative innovativeness of the projects are other qualities including their educational effectiveness, their fit with local conditions, and the skill with which they were introduced to local users.

While prototype qualities constitute one type of outcome, of greater salience to the educational development of the respective nations is the progress made toward institutionalization. In the introduction to this study, we reviewed the evidence. Only in Jamaica has there been no progress. In the Philippines, there has been very limited progress. In contrast, in the remaining four countries, variants on the national prototype appear to be gaining wide acceptance. Progress toward institutionalization is then another respect in which the national experiences differ.

Five factors influenced the differences in national outcomes

Five broad groups of factors were influential in shaping the respective national experiences. The full rationale for these factors will be outlined in chapter 10.

(1) *Project organization* As will become evident in the case studies, the projects differ in terms of their sources of support, the participation of foreign researchers, their linkage with local universities, and the national educational bureaucracy. All of these features appear to influence the outcomes.

Table 2. Comparing the initial national prototypes

Characteristics	Philippines	Indonesia	Malaysia	Jamaica	Liberia	Bangladesh
Objectives						
Lower unit costs	Y[a]	N	N	N	Y	Y
Improve education quality	Y	Y	Y	Y	Y	Y
Reach dropouts	N	Y	N	N	N	N
Personnel						
Instructional supervisors replace teachers	Y	Y	N	N	Y	Y
Community volunteers welcome	Y	Y	N	Y	N	Y
Adolescents tutor pupils	Y	N	N	Y	N	Y
Specialist teachers	Y	Y	Y	?	N	Y
Instructional material						
Self-instructional modules	Y	Y	N	N	Y	N
Instructional guides and instructional aides	Y	Y	Y	Y	Y	Y
Pupil worksheets	Y	N	Y	Y	Y	N
Radios to supplement written materials	Y	N	N	N	N	N
Instructional organization						
Integrated instruction of several subjects	Y	N	N	N	N	N
Periods longer than in conventional schools	Y	N	N	N	N	?
Classes divided into smaller groups	Y	Y	Y	Y	Y	Y
Older pupils assist in instructing younger	Y	Y	N	Y	N	Y
Peer tutoring	Y	Y	?	?	Y	Y
Programed learning in grades 4–6	Y	Y	N	N	Y	Y
Differential pacing allowed	Y	N	N	N	N	Y

[a]Y, yes; N, no; ?, uncertain.

(2) *Soundness of the prototype* Each of the prototypes outlined above has interesting features. But, for these prototypes to capture the interest of local educators, they must appear sound as well as effective in responding to educational problems that are not adequately served by conventional education. Not all of the prototypes fulfilled these conditions.

(3) *Administrative and educational context* The IMPACT prototypes, as innovations, necessarily differed from the conventional schools. For these prototypes to be adopted, changes would have to occur in a wide range of bureaucratic procedures. Some administrative contexts proved more receptive to these changes than others.

(4) *Socioeconomic context* IMPACT was intended to be a low-cost educational system. Nevertheless, as with any new program, there are substantial start-up costs. Nations that were experiencing economic difficulties experienced greater difficulty in providing these funds. Other features of the national and local context also had a bearing on IMPACT's success.

(5) *Consistency and strength of leadership* In all of the national cases, there were many changes in key personnel, including heads of state and ministers of education. In the face of these changes, perhaps the most critical determinants of IMPACT's fate in the six countries were the continuity and commitment of those individuals responsible for its development and their immediate successors.

I have outlined the main themes that will be covered in the six national case studies. In addition, research carried out by each project will be noted, especially research that influenced decisions relating to the projects' development. Following the case studies, I show how these concepts can be used to explain differences in the respective national experiences.

Part II
The Case Studies

3

The Philippines' IMPACT

IMPACT initially made rapid progress in the Philippines. Three years after the experiment began, a viable prototype had been developed that appeared to be educationally effective and to have the potential for cutting costs nearly in half. Despite the apparent merits of the prototype, in the years since its development, it has only been introduced in a small number of new locations scattered across the Philippines. The central government has been reluctant to make the changes that would be required to allow wider dissemination.

Background

Structure of government

The governments of the countries discussed in this report were strongly influenced by the ideals of Western democracies, and all have experimented with electoral politics. In the Philippines, party politics was institutionalized following independence from the United States in 1946. Although political contests have been characterized by violence, the electoral process has been relied on for three subsequent changes of head of state. It was in this way that Ferdinand Marcos succeeded to the presidency in 1965.*

Some minority groups, especially the Muslims on the southern island of Mindanao, feel that their interests are not adequately represented by the normal political process, and they have expressed their dissatisfaction through public protests as well as armed rebellion. As a result, from 1972 to 1977 the Philippines was under martial law. While normal government has since been restored, there have been numerous changes of personnel in the upper levels. For example, since

*This book was written before the change in government in the Philippines in 1986.

1974 when IMPACT was first introduced in the Philippines, there have been four ministers of education, plus a number of changes at lower-level offices.

Administration and organization of education

Education in all six countries is a responsibility of the national government, and the overall framework in each case is a centralized one. The national governments establish curriculum goals, authorize the overall structure, set standards for teacher training, and assume responsibility for educational finance. However, the manner in which this central administration is realized varies.

In the case of the Philippines, the constitution (Article III, Section 5) states:

> All educational institutions shall be under the supervision and subject to the regulation of the State. The Government shall establish and maintain a complete and adequate system of public education, and shall provide at least free public primary institutions and citizenship training to adult citizens.

In fulfilling its responsibility, the Philippine government has created a structure that includes 6 years of primary education, followed by 4 years of secondary school, and up to 4 years of university education.

The government's commitment in the 60s of 30% of the national budget clearly indicated its support for education. Since then, education's share has declined to about 12%. Taking all sources of educational expenditure into account, in 1980 only 2.8% of the Philippine gross national product (GNP) was going into education, quite modest given the scale of the system. Virtually all children enroll in primary schools, nearly 60% attend secondary schools, and, according to 1980 statistics, 27% of the college-age cohort were in college.

In keeping with its constitutional responsibility, the government seeks to fully fund the primary level, while sharing the burden at the advanced levels with state governments and the private sector. From the late 60s, surveys indicated that the government's contribution even at the primary level was slipping: only one textbook was available for every ten children and other essentials, including school buildings, were insufficient.

A major reappraisal of education resulted in the Educational Development Act of 1972 wherein it was proposed to improve the quality of facilities and to indigenize the content of education. From 1975, a large loan was negotiated with the World Bank to develop textbooks. In 1978, a USAID loan funded comprehensive improvements at the primary level involving both textbook production and the construction of new schools. In 1982, another large loan was obtained from the World Bank for the overall development of primary education.

These loans primarily affect activities managed by the Bureau of Elementary Education of the Ministry of Education and Culture, but this ministry has lacked the staff required to carry out the planning and negotiation involved in acquiring the loans. In 1972, a quasi-independent agency called the Educational Projects Implementation Task Force (EDPITAF) was established outside the ministry for this purpose. Within the government, EDPITAF has been the agency most interested in the welfare of the IMPACT experiment.

Curriculum

One important outcome of the 1972 educational ordinance was the transformation of the primary educational curriculum from its colonial subject-based

pattern to a new integrated curriculum infused with a richer indigenous content. The 1972 plan authorized five subjects: (1) communication arts, taught in English to cover science and health concepts; (2) communication arts, taught in Pilipino to cover social science concepts; (3) mathematics, to be taught in English as Pilipino still does not adequately express some of the concepts; (4) work education, taught as a separate subject from grade 1 to grade 6, for both boys and girls; and (5) character education, to be integrated into the above subjects.

At about this time, a new continuous progression scheme (CPS) was introduced in which teachers would develop materials adjusted to the level of each student. This program proposed to reduce dropout and repeater rates by enabling children to progress through primary school at their own pace. Without extensive experimentation CPS was introduced on a national scale. Most teachers lacked both the background and the resources to respond to this request, and little was accomplished. Indeed, a student achievement test in 1976, known as the Soutele survey (Philippines 1976), indicated that a large proportion of students were failing to master the elementary curriculum. The problems encountered in implementing CPS caused national leaders to develop a cautious attitude to new proposals for innovation, including IMPACT.

The Soutele survey provided the impetus for the large educational loans mentioned earlier and for another curriculum review. The outcome of the review was a decision to go "back to the basics." In 1981, the government released an outline for a new curriculum with fewer subject areas integrated in *A Continuum of Basic and Specific Learning Objectives* (Philippines 1981). In 1983 this continuum became the basis for new texts and teaching styles, to be implemented from the first grade, and adding a new grade each year.

Personnel

Most primary school teachers in the Philippines are public servants hired at the state level and assigned to the schools by the state educational office. As the Philippine educational system produces large numbers of college graduates, most of the recently recruited teachers meet the requirement of a college education. Reflecting the low level of public expenditure for education, the salaries of teachers are modest compared to the salaries of college graduates in the private sector, and the gap has steadily increased over the past decade. Primary schools in the Philippines meet from 8:30 a.m. to at least 3:30 p.m., 5 days a week. While teaching is a demanding job, it is not well compensated. Partly for this reason the morale of teachers is low, and many schools suffer from high teacher attrition rates. Turnover is especially high in rural areas, as teachers there have difficulty in supplementing their income. The student–teacher ratio at the primary level has slowly increased over the past decade from 30:1 to 35:1.

The experimental stage

Preparation

In the early thinking at INNOTECH, experimentation was not planned for the Philippines but for some location in the Indochinese peninsula. But as political conditions deteriorated there, other sites came under consideration. Dr Aurelio

Tiro, an INNOTECH staff member on loan from the Philippine Ministry of Education, volunteered to explore possibilities in his homeland. He received a favourable response, but the reasoning of his superiors was significant. They agreed to allow experimentation in the Philippines as a way of helping other less fortunate countries in the region. Apparently from the beginning, high ranking officials at the Ministry of Education did not think of IMPACT as something for the Philippines.

In October 1973, INNOTECH's Deputy Director Winarno Surachmad and research advisor Daryl Nichols visited the Philippines to confer with key officials. They were received by Dr Narciso Albarracin, Undersecretary of the Department (now Ministry) of Education; Dr Liceria Brillantes Soriano, Director of the Bureau of Public Schools; and Dr Tiro, formerly of INNOTECH, who had just been appointed superintendent of schools for Cebu Province.

Both Dr Albarracin, who also was Chairman of the INNOTECH board, and Dr Tiro were familiar with and supportive of the basic concept. The INNOTECH representatives went on to outline other details: identifying a project site in a rural area where less than half the population was educated, establishing a project office at a nearby university so that appropriate support facilities would be available, appointing project officers, and identifying appropriate people, presumably teachers, to work on the material preparation, training, and supervision that would become the responsibility of the project office.

Dr Albarracin agreed to look into these matters and, soon thereafter, he formed a national steering committee including himself, Dr Soriano, Dr Tiro, and Dr Bonifacio Sibayan, who was head of the Philippine Normal College. With two of this group natives of Cebu, it was not surprising that Cebu was selected as the region for the initial experiment. Within Cebu, they selected Naga for its conformity to the INNOTECH criteria of a high illiteracy rate, rural locale, yet easy access. Cebu Normal College, a private institution 24 km from Naga, was proposed as the location for the project site. Concesa Baduel, Dean of the Graduate School of the University of the Visayas, agreed to become project director and Rosetta Mante, Dean of the College of Arts and Sciences at Cebu Normal College, accepted the position of associate director. In November, Baudel and Mante went to Saigon to work out the details of the experiment with INNOTECH staff.

On their return they presented Dr Tiro, now Superintendent of Education for Cebu Province, with a list of positions for the project office. These included an instructional methods expert, instructional materials officer, science specialist, mathematics specialist, language specialist, applied skills specialist, social studies specialist, reading specialist, and supporting staff for typing, printing, artwork, and transportation. Dr Tiro relied on his administrative authority both in identifying the schools to participate in the experiment and in recruiting for these positions. The rationale for this top-down approach, instead of seeking out places and people that were interested, was that a broader replication could be initiated from above. However, the administrative approach to selecting sites exposed the project to the very real possibility of community alienation.

There were other inherent weaknesses in the project arrangements. For example, the director and associate director for the project lacked both line authority and, because they were not public servants, bureaucratic authority over the staff they had to work with. The principals and teachers at the project schools

were administratively responsible to Dr Tiro rather than the project officers. Even the staff seconded to the project office, being public servants, sometimes questioned the authority of the project director. Also, while it may have been appropriate to select a person such as Dean Baduel who had considerable stature in the region for the position of project director, the considerable time she had to devote to duties at her college necessarily detracted from her performance on the project.

A number of interesting arrangements were made to ensure the early success of the project. For example, to win over Dr Soriano whose goodwill as nationwide administrator responsible for primary schools was critical, IDRC provided additional funds to support one of her current interests, an experiment that rotated platoons of school children "In and Out of School" so as to double the number utilizing a single school facility.

Starting up

Having established the basic framework for the project, the national steering committee next worked on a strategy for its introduction at Naga. Dr Tiro began by forming a local steering committee composed of a barrio captain, a school principal, and a Parent–Teacher Association president who were socially and politically prominent in Naga. A principal of one of the Naga schools was appointed rural education officer for the project headquarters; not coincidentally this principal was the wife of the mayor of Naga.

On 4 January 1974, a launching campaign was begun in the Naga area with a day-long festival attended by all members of the national and local steering committees, the district supervisors of several of the areas near Naga, and the governor of Cebu. Along with the usual speeches, special sessions were arranged to elicit parental reactions. While parents were pleased that their leaders had brought a project to the community, some expressed concern with the expectation that they should actively participate as tutors for their children. These parents pointed out that they were extremely busy and lacked an adequate educational background. The launching campaign thus revealed a current of disapproval at the community level that would have to be overcome.

With school starting in June, the project team now had 6 months to develop its approach. After deciding that the intervention for the first year would be at the fourth grade level in English language and one other subject area, the team attempted an analysis of the curriculum and preparation of modules. However, they lacked formal training in these matters, and thus derived considerable benefit from the 4-month consultation of Michael Nathenson of INNOTECH. The technical details of Nathenson's approach and that of a second consultant, Douglas Ellson, are concisely presented by Flores (1981:48–53) and Aida Pasigna (Socrates 1983:15–64).

According to the team's plan, the initial intervention would transform two class periods of each day from conventional teaching to learning based on self-instructional modules. In that the modular learning depended on the children's reading ability in English, the proposed language for the modules, a reading test for prospective fourth graders was administered in March. To everyone's dismay, fewer than 10% passed the test. Immediately, the team developed a crash course in remedial reading and, during the summer vacation months of April and May, the prospective fourth graders took the course. By the end all were readers!

This particular intervention is rarely mentioned in discussions of the IMPACT experiment. However, later visitors to IMPACT, including Secretary of Education Juan Manuel, often commented on the impressive reading ability of IMPACT pupils. Indeed, at the national level, that was the main theme in the project's reputation. It is useful to keep in mind that the reading competence, at least of the first cohort of IMPACT graduates, derived from an intervention outside of the basic delivery system.

Also during the summer break, the first group of teachers who would work with the new modules was identified and given a special training course. To motivate these teachers, they were offered a special honorarium and their job title was changed to instructional supervisor in keeping with the original design.

At this stage it was apparent that a part-time project director could not handle the demands of the project so Dean Baduel resigned, and Orlando Claveria of the Saigon office became the pro forma director. In fact, much of the responsibility for day-to-day administration fell on the shoulders of Rosetta Mante, who soon thereafter was officially promoted to project director.

Into the schools

During the first year, the experiment affected only two subjects in the fourth grade of the five experimental schools. Each school received a set of English language modules; as a second subject some received math, some social studies, and so on. The distribution of second subjects over the several schools kept the module writers busy. The decision to intervene in only two subjects limited the potential damage if the approach proved unworkable.

The major difficulty encountered was in completing the modules on time. Also, as already indicated, some parents did not feel up to providing home tutoring for their children; so the project recruited volunteers from a nearby high school for this purpose. The project team devoted much time to holding community meetings and visiting the homes of reluctant parents to reassure them about the new approach. While some community members remained unconvinced, others enthusiastically supported the project, devoting some of their spare time to improving the school garden and building simple kiosks (umbrella-like shelters) on the school grounds so that small groups could meet outside their classrooms. At the end of the year, a reading test prepared by the Bureau of Public Schools and other tests prepared by the project staff were administered, and the pupils following the modules achieved impressive scores, especially in English. Thus the project staff felt confident as they faced the second year.

During the second year, the intervention was extended to all subjects in the fourth and fifth grades, and the programed teaching approach was introduced in the first and second grades. Upper-grade students were given special instructional guides and daily coaching so that they could tutor small groups of first and second graders. In keeping with the low-cost objective of the experiment, a single instructional supervisor was now made responsible for the combined class of fourth- and fifth-graders and the pupil–instructional supervisor ratio was raised from 38:1 to 56:1. The instructional supervisor was now provided with an aide to assist with the paperwork, but one teacher per school was made redundant by this change, and was transferred. The employment implications of the experiment had not previously been elaborated; so these transfers aroused concern among teachers.

During the first year, the module writers had prepared a format with about 50 modules per subject. Given the seven subjects of the official curriculum, this implied 350 modules for all subjects. Yet an evaluation of student progress in completing modules suggested that 350 modules would be far in excess of even the most outstanding student's capacity. The modules were also found to have inappropriate vocabulary and frequently a monotonous style. Thus during the second year, efforts were made to streamline and enliven the modules by, for example, introducing cartoon artwork and assigning an editor to review the language.

By the third year, the new instructional technology was to be used from grades 1 through 6. In the weekly staff meetings at the experimental schools, brain-storming sessions were conducted to plan for this eventuality. Out of these sessions came the idea of reorganizing the schools into "families," possibly the most original contribution of the Philippine experiment. A single family included 10–15 students from each grade level. With children of all grades sharing a common area, it would be easier for the older children to assist their younger peers. These changes were implemented and seemed to meet with the approval of both teachers and students. The actual size of families ranged from 60 to 90 students during the trial year. Later the families were expanded to as many as 150 students in some schools.

One feature of the original IMPACT concept that the Naga team failed to develop was the community learning centre. According to the original concept, the school site was expected to become a centre for various adult education programs. Moreover, it was hoped that parents and community members would freely contribute their labour as tutors and teachers of specialty craft courses. In fact, from the beginning, a sizeable minority in the Naga communities expressed their dissatisfaction with the IMPACT concept, and after the first month or so, community interest waned. While some parents did assist in teaching special skills or act as tutors, this participation was not as great as had been hoped. The fact is that many of the parents could not read or write and, in that respect, found it difficult to make use of school facilities.

Evaluation

Every week of the project, the teachers held a staff meeting to review progress, and at the end of each year systematic data were collected on attendence, student performance, and other indicators of the experiment's performance (Mante 1976). At the end of the third year, a thorough evaluation was carried out, and for the first time the idea of control schools was introduced as a basis for comparing results. In terms of academic achievement, internal evaluation indicated that IMPACT students performed well in most subject areas. However, it indicated a significant spread in achievement for upper-level students, a spread that was related to different module completion rates. Surveys of parents also revealed their concern that the modular approach was really only advantageous to bright students. From a parent's point of view, it was upsetting to see other children completing more material than their own child. These findings were the basis for a major revision of the modules in 1977.

Apart from these evaluations of the cognitive effects of IMPACT, IDRC proposed an evaluation of the cost-effectiveness of the system. This study (Tullao

et al. 1983) concluded that the fully developed IMPACT system could reduce per unit costs by as much as 40% (Table 3).

Table 3. Estimated annual cost of input requirements for a conventional elementary school compared with an IMPACT community learning centre (CLC) of 1200 pupils each.

Annual input requirements	Input costs (USD)	
	Traditional school	IMPACT CLC
Staff costs		
Teachers' salaries ($1234)	43190	—
Instructional supervisors' (IS) salaries ($1234)	—	14808
Principal's salary	2137	—
Rural coordinator educational analyst's salary	—	2137
IS aides' honoraria ($84)	—	1008
Specialist teachers' salaries ($1234)	2468	2468
Itinerant teachers' salaries ($1234)	—	2468
Janitor	575	575
In-service training or IMPACT training	110	221
Subtotal	48480	23685
Physical facilities costs		
Classrooms ($136)	4080	2448
Home economics building	408	408
Industrial arts building	408	408
Classroom desks ($1)	600	600
Kiosks ($3)	—	72
Long tables ($1)	10	20
Study testing carrels ($1)	—	24
Blackboards ($2)	240	240
Teachers' desks and chairs ($4)	140	48
Office furniture for principal ($10)	10	10
Filing cabinet ($2)	2	2
Typewriter ($10)	10	10
Mimeograph machine ($60)	60	60
Bookshelves ($1)	5	20
Subtotal	5973	4370
Learning materials teaching aids costs		
Modules ($0.58 pupil)	—	696
Textbooks ($0.68 pupil)	816	—
References ($0.20 book)	60	60
Science kit ($11)	33	33
Radios ($2)	2	12
Industrial arts tools ($20)	20	20
Home economics sets ($5)	25	25
Chalk, paper, charts, maps ($1)	150	150
Paper for student exercises ($5)	—	780
Subtotal	1106	1776
Utilities		
Telephone, electricity, water	600	400*
Total	56159	30231
Cost of IMPACT CLC as % of traditional school cost		53.8%
Annual cost pupil	46.80	25.19
Annual cost saving pupil by transition from traditional to IMPACT system		21.61

Source: Tullao et al. 1983.
*Reduced cost for IMPACT is based on number of classrooms.

Replication of IMPACT

The Philippines project achieved much international visibility, both because of its objective successes and because the INNOTECH office moved to the Philippines in 1975. Thus, as the first stage of the experiment was winding up, IDRC openly welcomed the possibility of an extension, but suggested the addition of new field sites and a major change in the modules.

With respect to the system, it was proposed that the modules be further improved by integrating several subjects into a single series of modules. The Naga project office already recognized that the current system had far too many modules and readily accepted the proposal. Within a year, an entirely revised and integrated set of modules was developed that was 40% more compact than the earlier subject-based system. It terms of site, replications were proposed in different areas to see if the system had wider applicability. In 1977, the full system was introduced in the fishing community of Lapu Lapu, Cebu, and in the resettlement community of Sapang Palay some 80 km from Manila.

In preparation for the replication, the IMPACT team developed an elaborate procedure for promoting community acceptance. Especially in Sapang Palay where a new school was being established, the procedure was implemented with considerable success. Local enthusiasm was so great that eventually well over 1000 students enrolled. Contributing to the successful launching of the Sapang Palay school was the energetic support of the district supervisor, Mrs Lesmes S. Avena, who was also project director. Before the launching of the project, Mrs Avena asked teachers in the district if they would be interested in working for IMPACT. Based on their answers, she decided who should be assigned to the project. Virtually all of the teachers who joined the project stayed with it for its duration, despite the difficulties encountered. Also contributing to the success of the Sapang Palay project was the tendency for the school to be a focal point in this new community and the strong support given it by parents, many of whom looked on education as the means for their children's upward mobility. The success of the Sapang Palay replication strongly suggested the feasibility of wider dissemination in the future.

Toward institutionalization

Concurrent with the beginning of the second round of the experiment in the Philippines, INNOTECH's office was moved to Manila, and Dr Soriano retired from the Department of Education to assume the directorship. While Dr Soriano did not emphasize the value of IMPACT for the Philippines, she did feel it had much promise for other developing countries. To promote external dissemination, she authorized extensive research on IMPACT by INNOTECH staff.

Substantial and convincing evidence was assembled to show the promise of IMPACT, both for effectively promoting learning by young people and for decreasing educational costs; moreover, the replication stage of the experiment demonstrated the feasibility of introducing the prototype at new sites. Yet the IMPACT staff faced a difficult task in convincing key Philippine decision-makers that the Philippines needed this new system. Given the healthy economic situation at that time and the large number of qualified graduates coming out of the

universities each year, no one in the top levels of the ministry felt that the Philippines was in need of a cost-saving delivery system for primary education or that there would be any need to significantly increase student–teacher ratios. Secretary of Education Juan Manuel recognized the promise of IMPACT, but took a cautious approach having witnessed the difficulties of implementing other innovations such as the continuous progression scheme.

Nevertheless, those associated with the experiment felt it would be embarrassing to simply abandon IMPACT, now that INNOTECH was in the Philippines. Recognizing that the continuation of IMPACT would require special funds for production of modules and other expenses, they searched for new sources of funding. At first, an effort was made to attach IMPACT to a large USAID grant for improving the quality of primary education (PRODED). This initiative had the approval of Dr Albarracin, Deputy Minister of Education, but apparently it was not fully supported by others in the ministry. Before the USAID loan was finalized, Dr Albarracin retired and the opportunity was lost.

About the time of these initiatives, Dr Augusto Tenmatay was appointed director of EDPITAF, the special governmental agency established to act as a broker between international lending bodies and government ministries. Dr Tenmatay was disturbed to see the initiative fail, and began to explore new approaches. In 1978, he proposed that IDRC join in cosponsoring a series of seminars to familiarize regional educational officers with IMPACT. Dr Tenmatay apparently hoped that if officers from several regions developed an interest in IMPACT, this might persuade the central ministry to lend greater support. A large World Bank loan to improve the quality of elementary education was then being negotiated, and it was hoped this might provide some funds to support the dissemination of IMPACT.

Secretary Manuel approved Dr Tenmatay's proposal to introduce IMPACT to the regional directors, but he was noncommital on the use of external funds to support dissemination. In his view, the Ministry of Education had made too many mistakes in past experiments, and he urged the cautious approach on an expanded tryout. He pointed out that the regional governments interested in IMPACT could draw on a newly established local discretionary budget to support these tryouts. At this stage, there was a considerable gap between the thinking in the ministry and EDPITAF.

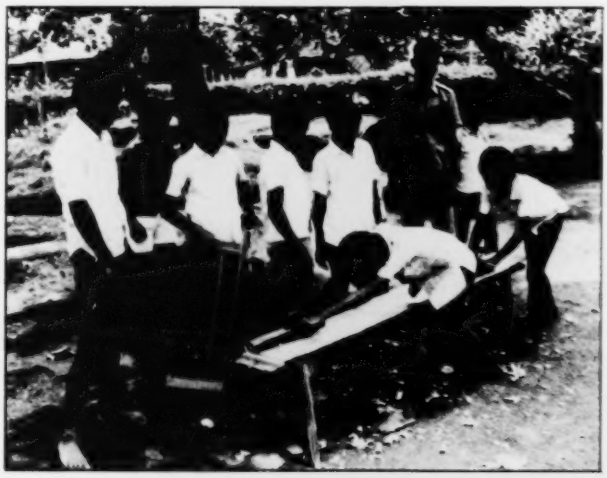
From 9 to 11 May 1979, the directors from 12 of the 13 regions joined key officials from the ministry, INNOTECH, and EDPITAF to consider the expanded tryout. Excellent materials were presented to the directors, and at the conclusion of the seminar each region indicated its desire to conduct at least one tryout during 1980–81. The official report of the meeting notes, on one hand, "the encouragement for self-reliance voiced out by Director Tiro of Region VII" and, on the other hand, "a possible tie-up with the EDPITAF–PRODED" (IMPACT Project Staff 1979). Several of the regional directors felt financial support from EDPITAF's PRODED grant would be necessary to offset the high initial cost of purchasing a full set of modules; adding to the cost in several regions would be the need to translate modules for the lower grades into the indigenous language. Subsequently, the Department of Education indicated its unwillingness to see central funds allocated for the expanded tryout.

At the second seminar, planners from each of the 12 regions came to discuss the location and other details of their respective tryouts. However, when the third seminar was convened in January 1981, representatives from only six regions participated. According to the EDPITAF convenors, the other regions decided they lacked sufficient discretionary funds to sponsor a tryout.

Five of the six regions eventually did launch tryouts, starting in June 1981. They were on their own and to date no one has compiled a report of their experience. As part of this study, I visited one of the expanded tryout sites as well as all of the original IMPACT sites. In Cebu, all of the sites have had to abandon IMPACT as the discretionary funds available to the district office were simply insufficient. In Sapang Palay the IMPACT school continues, apparently due to a subsidy from INNOTECH. At Zamboanga, the expanded tryout site I visited, an excellent school is in operation thanks to the enthusiastic support of both the regional director and the district supervisor. However, because of inadequate funds, the instructional supervisors have to manage very large families (upwards of 80 students) without the assistance of instructional aides; also, there are no funds for replacing the original set of modules which are badly worn. While the school uses half as many teachers as nearby schools, budgetary procedures do not allow the saved salaries to be used by the school for other purposes. The ministry's proposal of self-reliance failed to take account of this bureaucratic reality. Unless some means can be found to convert the implicit saving of the Zamboanga school into actual revenues, the school's modules will soon be depleted and it may also have to abandon IMPACT.

The high-level decision-makers in the Philippines are now ambivalent about IMPACT. For example, the Director of Elementary Education, Dr Minda Sutaria believes there may be a need to promote IMPACT on a wider scale. She expressed a conviction that IMPACT is especially appropriate in areas where new schools need to be built to accommodate an expanding population. Having said this, Dr Sutaria sees no need to make provisions for the special financial needs of IMPACT schools, suggesting that bottom-up reforms based on self-reliance are the most enduring. This ambivalence in thinking about IMPACT suggests that its days are numbered in the Philippines.

The Philippines case presents the greatest irony of the IMPACT story. The experiment developed the most innovative prototype of all, and it has been discussed in donor conferences and educational meetings around the world. Yet, at home the prototype has met with a cool reception. In chapters 10 and 11, I suggest some of the reasons for this paradoxical outcome.



4

Indonesia's PAMONG

Virtually at the same time that IMPACT began in the Philippines, Indonesia launched Project PAMONG. The Indonesian experiment progressed somewhat more slowly, but eventually was able to attract considerable attention both within the country and from foreign donors. Several variations of the original prototype emerged, and today two of these are officially recognized as the means for achieving the new national goal of obligatory education for all children of primary school age.

Background

Structure of government

Indonesia had to engage in a violent revolution to gain independence, which the Dutch finally acknowledged in 1950. Following its heroic struggle, the new nation established a democratic system under which a large number of parties formed. The difficulty of arriving at agreement among these parties led to a decade of experimentation with "guided democracy" under the leadership of President Sukarno. Following an attempted coup, the New Order government was formed by General Suharto and the Golkar Party was established to consolidate many of the key political groupings. At the same time, other parties were also allowed to form; the major alternatives are the Islamic United Development Party and the Democratic Party. The present electoral system guarantees the Golkar Party a substantial majority in the national parliament, but enables competing parties to present their viewpoints. While this system has resulted in continuity in the president's office, there have been periodic changes among those holding

lower offices. Since PAMONG was first introduced in 1974, there have been four ministers of education and three different heads of the ministry's Centre of Educational and Cultural Research and Development (Badan Penelitian dan Pengembangan Pendidikan dan Kebudayaan (BP3K)), the agency responsible for PAMONG's development.

Administration and organization of education

The Indonesian educational tradition has a dual heritage. Needing to educate their own children and a small group of Indonesians for government work, the Dutch colonialists gradually built a European-style educational system with Dutch as the language of instruction. As a counterpoint to the Dutch system, a small number of schools were established by Indonesian educators to teach the continental subject matter, but in a local language. Meanwhile, religious leaders in many communities established small schools primarily to carry out religious education. Graduates from both these indigenous traditions were influential in the struggle for independence, and both gained recognition when the new republic was formed.

During the course of Indonesia's struggle for independence, a constitution was drawn up declaring the government's intention to provide education for all in their own language. Immediately following independence Bahasa Indonesia was recognized as the official language of instruction. Most of the Dutch instructors were removed from the schools and universities, and other countries, particularly the United States, became the major sources of educational technology and advanced training.

To realize education for all, the new government decided to mobilize the previously established educational institutions of both the Dutch and indigenous traditions. Building on the schools established by the Dutch, a national educational system was set up under the Ministry of Education to provide comprehensive education from the primary level to university. The main focus of the national system was formal education, but nonformal educational institutions were also emphasized as a means of reaching out to the large number of adolescents and adults that had been left illiterate under the colonial system. Alongside this national system, religious schools were allowed to operate under the general supervision of the Ministry of Religious Affairs.

From the beginning, the main concern of the central government was to develop the national system; so government funds went mainly to these schools. But as religious schools incorporated more hours of secular education in their programs, the government increased its assistance to them.

Both sectors rapidly expanded over the first two decades of independence, but against a background of the government's decreasing ability to generate revenues. Educational expansion occurred at all levels; even by 1970, Indonesia, one of the poorest countries in the world, had as large a proportion of the age cohort in tertiary education as many countries that were much more highly developed in other respects. Today, while Indonesia ranks next to last in terms of development among the six countries examined here, it is second in terms of educational opportunities at the tertiary level and it also achieves an impressive level of primary enrollment.

To carry out school expansion, the state employed large numbers of inadequately trained teachers, while allowing the real value of teachers' salaries to decline. By the mid-60s, Indonesia's schools were in a pitiful state, devoid of textbooks, with teachers receiving a monthly salary sufficient for only 4 days of rice, and with students usually dropping out after no more than 3 years.

The New Order government has gradually sought to improve educational conditions. From 1969, a major assessment of the system was begun with the assistance of Unesco and the Ford Foundation (Beeby 1979). A by-product of this assessment was the establishment of the Centre for Educational Development (Badan Pengembangan Pendidikan (BPP)) within the Ministry of Education. Subsequently, the office was upgraded to the level of a directorate general (BP3K) and became the base for various innovative projects including IMPACT–PAMONG. The problem BP3K faced in all of these projects was cultivating the interest of other sections of the ministry in the innovations it was developing so that, once matured, they would be adopted by these other sections.

From the mid-70s, as the government began to benefit from oil revenues, the educational system experienced significant quantitative and qualitative improvement. At the start of the second 5-year plan of 1974–79, the allocation for the development fund of education went up 500%. A new program for building primary schools was launched, and the government also secured large international loans to produce textbooks and train teachers. These new programs, it should be noted, affected only schools under the Ministry of Education, and these were administered by directorates general other than BP3K. In 1984, Indonesia began its fourth 5-year plan, with education receiving about one-quarter of the national budget or 2.4% of the GNP. The major issue facing PAMONG was the extent to which it would be mentioned in this plan, if at all.

Curriculum and texts

Revisions in the structure of education and the curriculum were introduced as soon as the New Order government was constituted. In terms of basic structure, the system acquired an American pattern with 6 years of primary education, 3 years of lower secondary, 3 years of upper secondary, and a diversity of tertiary opportunities, the most prestigious being the 5-year university program. At the primary level, the official 1968 curriculum covered nine subject areas. This curriculum was judged by the authorities to be too demanding, and from 1975 a new curriculum was devised emphasizing six subjects: arithmetic, language, social studies, science, religion, and *pancasila* (the Indonesian philosophy of life). During the first 3 years of primary school, at least part of the instruction may take place in vernacular languages, but from the fourth grade all instruction is supposed to take place in Bahasa Indonesia, the national language.

Two large loans have enabled the writing of texts for all subjects based on the 1975 curriculum and the production of approximately 140 million volumes for nationwide distribution. This program has dramatically improved the availability of texts in primary classrooms. An extensive program of teacher-training courses has also been geared to the new curriculum. Given the heavy government investment in improving and promoting the conventional system, an alternative delivery system such as PAMONG faces an uphill battle in gaining acceptance.

Still there are well known problems with the conventional system. The "modern math" approach, now in place, is not working well; schools lack laboratory equipment for science; and some areas face difficulty with the *pancasila* and religion courses. Despite all the improvements, dropout levels remain high, especially in rural areas, and less than half of all primary school entrants stay to completion.

Personnel

During the 60s, the number of tenured primary school teachers (*guru tetap*) rapidly increased. While salary levels declined during this period, there were few alternative employment opportunities for secondary- and tertiary-level graduates. To make ends meet, teachers sought extra jobs as tutors, shopkeepers, or even as farmers. Faced with the large number of tenured but often inadequately trained teachers, the New Order government temporarily suspended hiring, and emphasized training courses as a means of upgrading the quality of teaching. Still, absenteeism among teachers busy at their second jobs plagued the schools. The unwillingness of government to hire new teachers was strongly protested by the already extensive system of teacher-training colleges that were conducting preservice courses along with in-service training. Subsequently, the government resumed the recruitment of new teachers and on several occasions raised teachers' salaries; today a young teacher can expect to earn as much as a junior-level official. In many areas of Indonesia, there is now a surplus of trained teachers waiting for a tenured opening. In a national context where the government has responsibility both for generating employment and for supporting the major teacher-training institutions, the stock of unemployed trained teachers creates an obstacle to any innovation seeking to increase the student–teacher ratio.

The experimental stage

Preparation

Contemporaneous with the founding of SEAMEO's INNOTECH, Indonesia's Ministry of Education created BPP to coordinate research and development efforts for education. From 1969 to 1971, much of the staff time of BPP was involved in facilitating a major assessment of Indonesian education (Beeby 1979) in cooperation with Unesco and the Ford Foundation. This effort helped to clarify the magnitude of Indonesia's educational problems as well as to bring together a core group of innovative educators who were prepared to attack these problems. Indonesia's early representation to INNOTECH was selected by BPP.

During the 60s, partly to create employment, the national government had promoted a massive nominal expansion of primary education by giving low-salaried teaching jobs to large numbers of graduates from lower secondary schools. Due to this expansion, the nation had many underqualified teachers as well as classrooms without textbooks or other instructional materials. While pupil–teacher ratios were low, this did not signify quality education.

At BPP, considerable effort was devoted to clarifying the quantitative dimensions of Indonesia's educational problem. These studies heightened concern with the high level of wastage in the conventional system, due not to a lack of teachers

but to a lack of necessary instructional materials and good teaching. Behind these shortages was the low level of public expenditure.

BPP's (subsequently renamed BP3K) analysis of the national educational problem shaped its reaction to INNOTECH's proposal for an IMPACT experiment. Winarno Surachmad, the representative to INNOTECH, had been somewhat isolated from the ongoing analysis back home and thus enthusiastically endorsed the IMPACT idea. Initially, the top leadership at BPP also approved and quickly made arrangements for field sites near Solo and a project office on the campus of Institut Keguruan dan Ilmu Pendidikan (IKIP) Surakarta.

As the leaders of BPP began to think more carefully about the implications of the experiment, they realized that important modifications would have to be introduced before it would be appropriate for Indonesia. Soemitro, head of BPP's Center for Innovation, was most articulate on the need for local modifications. When he first emphasized his concern at the November 1973 INNOTECH seminar on delivery of mass education in rural southeast Asian communities, (INNOTECH 1973c), the INNOTECH staff including Winarno were surprised. However, it was partly due to Soemitro's objections that the "No More Schools" label was dropped and the international project was renamed IMPACT, which translates into Indonesian as Pendidikan Anak oleh Masyarakat, Orang tua Murid, dan Guro (PAMONG).

In contrast with the Philippines experiment, BPP insisted it would assume direct responsibility for project management; the project office at IKIP Surakarta was to be under BPP with INNOTECH placed in the somewhat vague role of sponsor. Also, in these early months, BPP elaborated some of the modifications of the Indonesian approach. The focus was to be on developing the new programed instructional materials to improve the quality of education and to reach dropouts. However, as Indonesia's rural schools had many teachers, the number of teachers in each school was not to be reduced; rather their time was to be reorganized so that some could supervise special learning posts (*patjar*) intended for educating dropouts. Because other agencies in Indonesia were concerned with adult education, the community learning centre concept was dropped; however, adult volunteers would be recruited to assist as tutors and to teach skills. Another noteworthy difference was PAMONG's explicit concern with the noncognitive side of learning. In these ways, Indonesia pioneered in the indigenization of the IMPACT concept.

From the point of view of the INNOTECH central office, these modifications were thought of as bad management, and the Indonesian experiment was described by INNOTECH staff as "in trouble." As the Indonesian experiment evolved, its independent tendencies became more manifest. From 1974, the national educational budget rapidly expanded, and the concern to use PAMONG to reduce educational costs was virtually abandoned.

Starting up

The Indonesian project officially began in January 1974, although it was not until June that the staff was assembled. All the officers and writers were faculty members of local higher educational institutions, rather than teachers. Most were either from IKIP Surakarta or the teacher-training faculty of Universitas Sebelas Maret; later the two institutions merged and the project office became an important affiliated centre.

Early work was devoted to analysis of the 1968 curriculum. The project decided to prepare modules for six subjects aiming to begin in grades 1 and 4 by January 1975, the beginning of the new school year. To facilitate the writing, staff were expected to visit the experimental schools and submit their materials to project editors. Possibly because the writers were paid on an hourly basis and were allowed by their universities to work only 3 hours a day, writing proceeded slowly. From 1976, writers began to be paid on the basis of their productivity.

Into the schools

Originally six schools were selected: four in the Kebrakamat area near Solo and two in a more isolated mountainous area 2 hours away. Apart from the customary visits with village heads and other local officials, the project hit on the idea of investing one million rupiah (in 1975, 400 Indonesian rupiah [IDR] = 1 United States dollar [USD]) in the local cooperative bank as a way of demonstrating concern for the community's development.

From 1975, self-instructional modules for two subjects were introduced in grades 4 and 5. Teachers at the schools were given a special honorarium for their participation in the project as well as the title of instructional supervisor. As they used the materials, the instructional supervisors reported weaknesses to the project staff: the difficult words, inappropriate examples and illustrations, the inadequate instructions. These suggestions were filed in the project office for the periodic revisions.

The following year programed teaching was introduced in grade 1 using the brighter students of grades 5 and 6 as tutors. In addition, experimentation with self-instructional modules began at learning posts (*patjar*); one of the teachers from the upper levels in each school was released to supervise *patjar* activities. Apparently 100 children were originally recruited to the *patjar*, but within months only 40 remained. Ultimately, 19 took a primary-school leaving examination, and 14 were passed at the grade 6 level.

In 1977, important modifications were introduced. Grade 1 was returned to conventional teaching and programed teaching was emphasized in grade 2 and the first half of grade 3. Instead of relying on the bright students of the upper grades, all students were now required to take their turn at tutoring. This latter change was introduced to quiet the complaints by bright students that they lost time when tutoring, and also to allow all children to share in the growth experience related to tutoring others. Finally, at grades 4 and 5, to alleviate the problems associated with children proceeding through the modules at different paces, the self-instructional approach was replaced by peer-group learning with the leadership of each peer group rotated among the members.

Evaluation

In the original selection of schools, the Indonesian project apparently identified a set of control schools for comparison with the PAMONG schools. Yet over the first stage of the experiment, the process of evaluation did not involve explicit comparisons with these schools. Comments by the teachers at the experimental schools and visits to the schools by project staff provided one form of evaluation.

Supplementing these internal observations were the frequent visits of Mr Soemitro and his staff. José Socrates, officer-in-charge of research from INNOTECH, made these observations during a 1977 visit (Socrates 1977):

> From all appearances, Project PAMONG, although considered as a research project, was never meant to disprove a hypothesis. From the start, it seems to have been assumed that the delivery system is effective, and hence potentially useful in the Indonesian system of education. Because of this, the function of the project staff was simply to perfect the system.

During these first years, the PAMONG project did not attempt to compare the performance of its graduates with other students. While the project abandoned the cost-saving goal of the original IMPACT, it did develop other innovations that were appropriate in the Indonesian context, especially the *patjar* for reaching dropouts.

Though PAMONG had not put together the same type of supporting evidence as IMPACT, BP3K was satisfied with the project, and in early 1977 began to ask educators in other areas if they wished to replicate the system. Meanwhile, the staff at Solo began revising their modules to take account of the curricular changes implied by the new 1975 *National Curriculum Guide*.

Toward institutionalization

In contrast to the Philippines, the Indonesian experiment from the beginning had a firm institutional base both in the field, where it was being supported by a special centre for educational innovation at Universitas Sebelas Maret, and at the Ministry of Education, where it was the key project of BP3K's Center for Innovation. Thus the careers of a large number of public servants were tied to the success of this innovation. Moreover, there were discretionary funds available to respond to various problems that arose in the course of the experiment.

While the Indonesian experiment had more powerful allies, these allies did not have the same level of research skills as their Philippine counterparts. At least in the experimental stage, far less research was conducted and published. Thus it was difficult to say whether the experimental approach was demonstrably superior to the conventional approach, except that it did, through the *patjar*, provide a means for reaching dropouts.

In 1977, Mr Soemitro, head of the Center for Innovation, sent a letter describing PAMONG to the heads of the provincial educational offices. An especially enthusiastic response came from Bali, leading to an agreement to try out the PAMONG approach there. Bali was an interesting choice for replication in view of its distinct Hindu culture, the tight-knit pattern of community organization (the *banjar*), and its distinct local language. Bali was also a good choice because of its high population density, high dropout rate, and its proximity to Solo (convenient for fly-in consultants).

Haris Mudjiman, the PAMONG planning officer, carried out a baseline survey in Bali during May of 1977, resulting in selection of five schools in the village of Mas in Gianyar district. A local liaison office was set up there, staffed by three local educational officers. Over the next months, modules were shipped from Solo and

intensive training sessions were held for educational officers, teachers, and community leaders. The replication was launched on 1 October, the beginning of the third trimester of the normal school year, as that was also National Day (Hari Kesaktian Pancasila).

In 1978, as IDRC funding was running out, BP3K's Center for Innovation began to think of further field-testing in different environments before proposing nationwide dissemination. Contact was established with the chief educational officers of several provinces. Again, Bali expressed keen interest, and now the governor was familiar with the Mas replication and impressed with its capability of educating dropouts. Agreement was soon reached for an extension to 21 new schools plus the five at Mas, provided appropriate funding could be secured. A special feature of the extension would be its administration through the normal machinery of the district office rather than from project headquarters; Solo's function would be limited to providing modules and technical assistance.

Meanwhile, on the initiative of some local educators in Malang who had personal contact with BP3K, another replication was begun. In the Malang case, the local authorities purchased their own set of modules and proceeded to develop a unique delivery system. The Malang prototype consisted of (a) instruction in the core school based on conventional texts, but reinforced with programed instructional techniques outlined in teaching guides specially prepared by the Malang group; and (b) instruction at learning posts based on the PAMONG self-instructional modules. The Malang prototype, while developed independently of BP3K, eventually assumed a key role in the nationwide dissemination program.

About this time, BP3K was asked to address another problem, the inadequate provision of education in sparsely populated and isolated areas such as the eastern islands. In these areas, possibly no more than 50 school children could be brought to a likely school site, and the conventional system, tied to textbooks and one teacher per grade level, was not designed to cope with such small numbers. BP3K decided, in 1978, to try out various combinations of components from PAMONG in five such schools located in central Kalimantan. This effort was labeled the "small-schools" experiment.

The office was able to start these initiatives with its own funds. However, for long-term work it needed additional support either from the government of Indonesia or an outside donor. Overtures to key donors produced an embarrassment of riches, for USAID, UNICEF, and IDRC all expressed interest. In the subsequent discussion, USAID agreed to focus primarily on assisting development of the Solo project office and its work in Solo and Bali, while UNICEF would focus on small schools, especially in Kalimantan and east Java. IDRC offered to support limited evaluation research. Among the three grants, USAID's was by far the largest, exceeding USD 3 million; the technical component of the AID grant was contracted to IIR, and Dr Dean Nielsen was recruited to assist in Solo and Mr Doran Bernard in Bali.

During the first year of renewed support, there was considerable progress. The Solo staff were able to complete most of the work in updating the modules to conform with the 1975 curriculum and made important advances in procedures for production of materials and training of school staff. A solid program of research was launched to evaluate both the academic achievement and the social values of PAMONG students.

A startling development in Bali was the gradual decline in school enrollment. Although PAMONG schools were popular, the actual number of school-aged children was rapidly decreasing (as much as 40% between 1978 and 1983), due to a highly successful family planning program. The declining enrollment pointed to the prospect of teacher redundancy, which certainly undercut any prospect for saving costs through increasing the pupil–teacher ratio.

While the *patjar* system had not proved very successful in Solo, it was much appreciated in Bali. Community leaders assisted in recruiting dropout students and ensuring that they attended sessions. Community volunteers, who in fact were usually unemployed graduates of teacher-training schools eager to gain favour with the local educational authorities, regularly assisted the *patjar* sessions. By 1983, large numbers of dropouts had completed the *patjar* course and passed the primary leaving examination. Schools which combined the PAMONG in-school instructional approach and *patjar* were labeled PKB (Pusat Kegiatan Belajar). In contrast were the PPKB which combined the conventional in-school approach with *patjars*. Yet another variant was the *ketjar-patjar*, which involved nonformal education to establish literacy and numeracy, after which a pupil could enter a *patjar* to work toward a primary school diploma.

One early problem encountered by the *patjars* was attrition to the literacy courses (Paket A) that were being promoted aggressively by the Directorate General of Non-Formal Education, also of the Ministry of Education. However, once the public realized that the *patjars* offered the advantage of a regular primary school certificate permitting continuation at the secondary level, this attrition abated.

Most impressive in Bali was the progress in classroom management. To alleviate the complications arising from students completing their modules at different rates, peer-group learning was adopted. Furthermore, the group was instructed that it could not move on to a new module until all members had achieved a 90% level of mastery. Extensive reliance was also placed on students to correct each other's papers and record their results, so the teacher's time could be reserved for academic consultations. These procedures were intended to promote group cooperation and, presumably, mastery. While the former goal was certainly achieved, studies comparing the academic achievement of PAMONG students with control groups give conflicting impressions (Setiadi and Seymour 1982; Nielsen 1982b).

The small-schools initiative also enjoyed early success. Bappenas, the central planning agency, asked in 1980 for even wider dissemination of the model, but UNICEF and BP3K agreed that they were not yet ready. By 1981, 15 schools in central Kalimantan, five in southwestern Sulawesi, and six in Madura were using the new model. During that year the system was sufficiently improved that its developers could support wider diffusion. According to UNICEF, by 1983 the numbers had increased to 100 in central Kalimantan and southern Sulawesi, 25 in Madura, and 132 in other various isolated areas of east Java.

Just as PAMONG was beginning to take off, its prospects were disturbed by political developments. In 1980, a new minister of education was appointed who changed the leadership at BP3K. Although the new chairman supported PAMONG, a long and serious illness prevented him from promoting it within the ministry. Meanwhile the bureaus in charge of conventional education improved

their status. At the time it attained its foreign assistance for development of PAMONG, BP3K had not consulted extensively with the other bureaus. Yet, for the eventual implementation of the system, their cooperation would be necessary. As BP3K's grants began running out and its status was in a state of decline, the line bureaus began to question the value of several BP3K experiments including PAMONG.

Objectively, the PAMONG case was not strong. While its proponents said it offered better quality education, the research they conducted did not confirm this. As developed, it was more expensive than the conventional system, for it used the same number of teachers and required a much larger volume of instructional materials.

Faced with these hard realities, in mid-1983 the Universitas Sebelas Maret centre, at the strong insistence of BP3K, suddenly decided on two major changes that until that point had been firmly resisted. First, the number of pages in the modules was reduced by nearly 60% by eliminating some review sections, illustrations, and generally streamlining the material. This change promised to make the programed instruction format cost-competitive; a recent cost analysis indicates that the PAMONG approach is at least 12% less expensive than conventional education (Suparman and Klees 1984). Second, the centre began work on programed teaching guides that could be used to supplement the textbooks preferred by the Directorate General for Primary Education. While the Solo centre had not adopted this latter approach, it had already been tried by an independent school in Malang and had caught the attention of key centre educators. This approach using programed teaching guides was given the label Petunjuk Mengunaan Paket Buku (PMPB). With these two initiatives, PAMONG now had approaches that were more acceptable to the new leadership in the Ministry of Education.

In 1983, following the nationa! election, a new set of actors assumed the offices of minister and head of BP3K. The new minister had a traditional orientation to education. When his deputy decided to remove large experiments from BP3K, PAMONG faced an uncertain future, for neither the minister nor the heads of the relevant line bureaus had been involved in the genesis of this nonconventional delivery system and most of its prominent supporters were no longer in the ministry.

Whereas BP3K had formerly sought to keep control over the development funds for PAMONG, supporting the Universitas Sebelas Maret PAMONG centre on a contract basis, it became apparent that further development funds for this purpose would not be forthcoming, and the foreign grants were expiring. The responsible officers both at BP3K and Solo hurried to obtain a new allocation of development funds so Universitas Sebelas Maret could operate as an independent centre, thus keeping PAMONG alive.

In subsequent months, two events worked in PAMONG's favour. First, from the president of the republic came the instruction that Indonesia should in the near future seek the means to realize "obligatory education" for all children of primary school age. Second, facing a rapidly increasing number of applicants for entrance to tertiary education, the central government decided, from June 1984, to receive applications to a recently conceptualized open university. As the Solo research institute was one of the few places in the nation that had experience in developing

Table 4 Indonesia's principal prototypes

Prototypes	In-school features	Out-of-school features
PKB (Pusat Kegiatan Belajar)	Programed instruction and programed learning based on PAMONG materials	Self-instructional modules for dropouts with basic literacy
PPKB	Conventional education	Same as PKB
PMPB (Petunjuk Mengunaan Paket Buku)	Conventional texts taught with programed techniques indicated in teaching guides	Same as PKB
Small schools	Same as PMPB	None

the kind of self-instructional materials required, it was granted a contract to assist the open university.

As leading educators met to discuss ways to comply with the presidential instruction on obligatory education, many testified to the value of PAMONG prototypes in reaching dropouts and children in isolated areas. The characteristics of the principal prototypes are indicated in Table 4. In the final plan for the realization of obligatory education, the PAMONG small-school model and the PMPB model relying on conventional texts and special teaching guides in the core schools and self-instructional modules in the learning posts were formally noted as approved means. Following this decision, the central government gave full centre status to the Solo research unit, designating it the Center for Research and Development for Self-Motivated Learning Systems.

According to a recent assessment (Thiessen 1985) of PAMONG, the above developments auger well for PAMONG's future. In 1985, approximately 426 schools were using some variant of the PAMONG approach, or nearly double the number in 1982 (244 schools). The PAMONG schools are still concentrated in Bali, east and central Java, and central Kalimantan. One of the biggest challenges to wider dissemination will be the effectiveness of the Solo centre in organizing and conducting meaningful training programs. In 1984, the chief educational officers of all of Indonesia's 26 provinces visited Solo for a special exposure course. Now it remains to be seen how many provinces will ask for more assistance, and how resourceful the PAMONG experts will be in responding to their requests.

After a slow start, PAMONG is gaining momentum. The Indonesian educational system is large and encompasses a diversity of educational environments. PAMONG seems to be finding a place on the edges of the system where more conventional delivery systems have failed. It will be some time before the full impact of PAMONG can be determined.

5

Malaysia's InSPIRE

Objectively, prosperous Malaysia had far less need for a low-cost delivery system than did the Philippines and Indonesia. However, a university-based group of Malaysian educators believed that certain apsects of the IMPACT approach might provide insights for improving the quality of education in rural Malaysia. Soon after this group received support from IDRC for a small experiment in peninsular Malaysia, the national educational system underwent drastic reform and the project faced a host of uncertainties. While the next years were difficult, the project group was flexible and responded creatively to the evolving opportunities. Indigenous funding was obtained and currently the project is making important contributions both in peninsular Malaysia and in Sabah.

Background

Structure of government

Malaya gained independence from Great Britain in 1957, and in 1963 Malaysia was formed. Malaysia is a constitutional monarchy modeled along the lines of the British system; actual power resides in the lower house whose members are chosen by popular elections. While there are some 15 parties in Malaysia, the 10-party alliance called the National Front has dominated elections since 1972. Dr Mahathir bin Mohammed, who had earlier been minister of education, became deputy prime minister from 1976 to 1982. During this period there was a review of the educational system of Malaysia by a cabinet committee chaired by Dr Mahathir. The report of this committee was released in 1979 by the government (Malaysia 1979). One recommendation was the proposed "back to basics" primary curriculum. By the end of 1981, the Curriculum Development

Centre was asked by Datuk Musa Hitam (then minister of education) to begin work on this new curriculum. Soon after, Dr Mahathir became prime minister and Musa Hitam became his deputy prime minister. In 1982, the new curriculum called the KBSR (Kurikulum Baru Sekolah Rendah) was pilot-tested in 320 schools and subsequently introduced nationwide in 1983.

Administration and organization of education

Many of the key traditions of the Malaysian educational system have their roots in the British colonial period. The British established an English-language system to train a small number of local people for the Malay civil service. This system closely followed the English model with primary-school leaving exams, O-levels and A-levels, administered by reputable boards resident in England. Thus a top graduate of the colonial system had the option of applying to a university in the U.K. or to the University of Malaya, where the majority of the faculty were expatriate and determined to maintain the English standard. Because of the dependence on foreign staff, the colonial system was expensive. Tuition was charged at all levels, both to cover costs and to effect a social screening of applicants.

In addition to the English-language system, the British sponsored a system of primary education in Malay. Plantations were required to provide schools for the children of their workers, usually Indian, in the vernacular, which was largely Tamil. Finally, the Chinese community was allowed to establish its own schools in the Chinese language.

With the approach of independence, an education committee was established in 1956 to propose a national educational strategy. In its report, known as the Razak report (Malaya 1957:3), Malay was designated as the national language and it was stated:

> The ultimate objective of educational policy in this country must be to bring together the children of all races under a national educational system in which the national language is the medium of instruction, though we recognize that progress towards this goal cannot be rushed and must be gradual.

The Rahman Talib Education Review Committee was established in 1960 to plan the implementation of the Razak report. One important theme in its report was the clarification of federal and state responsibilities; while the major responsibilities for policy formulation, finance, and administration were assigned to the federal level, the actual running of schools became a state function.

From a fiscal perspective, it is apparent that the federal government gives high priority to education. Education annually receives about 20% of the national budget, about 6.7% of the GNP in 1980. Concern for promoting national integration through education and a need for trained manpower are part of the explanation for this level of expenditure. In addition, it should be noted that the single most important political base of the ruling alliance is the support of the Malay Teachers' Union.

Structure and curriculum

The outcome of these two key reports was a 6–3–2–2 system of primary, secondary, upper, and postsecondary levels with the first 9 years provided free, mainly in the Malay language. National examinations are administered at the

conclusion of both the third and fifth forms of the primary level, and these indicate wide disparities between and within schools. Nevertheless, students are automatically promoted from one grade level to the next. To moderate the task of educating students of disparate ability attending a common grade level, students are streamed into different ability classrooms, as well as into groups within classrooms. While this practice may actually accelerate the disparities, Malaysian educators firmly adhere to it.

The secondary level, though not compulsory, is open to all; beyond that there is stringent selection. Through the mid-70s the upper levels were taught in English and were concluded by O-level and A-level examinations administered by the Cambridge Syndicate. The concern to provide upper level children with the appropriate background for these tests meant that courses at the lower level, though taught in Malay, had to follow the English curriculum. However, from 1977 Malaysia decided to abandon the English tests and conduct the upper level schools in Malay. Moreover, reports from the field indicated that many children were experiencing great difficulty in covering all of the traditional subject matter. Thus, from 1981, Education Minister Musa Hitam began speaking of fundamental curricular reform going back to the basics. Following his advancement to the post of deputy prime minister, Musa Hitam requested the Ministry of Education to move with all possible speed to carry out the suggested reform. From 1983, Malaysia began the implementation of the new KBSR curriculum, which figures prominently in our story.

Teachers

The relative absence of opportunities for indigenous secondary and advanced education during the colonial period, combined with rapid growth both in the economy and the educational system, has resulted in a situation of relative shortage of teachers overall, and especially in certain subject areas. Some teachers are actually recruited from Indonesia and English-speaking countries to relieve the shortage. Partly due to this teacher shortage, the student–teacher ratio in primary schools is relatively high, 39 to 1 in 1980. The high ratio makes it easier for the government to pay teachers substantial salaries, much above the level in the other five countries of this study. Still, teachers are not pleased with the high ratio and seek its reduction. Obviously, a cost-saving innovation such as InSPIRE, insofar as it proposes to increase the student–teacher ratio, would not be popular in this environment. Partly for that reason, the Malaysian experiment took a different form from the parent models: the cost-saving component of increasing the student–teacher ratio was never entertained.

The experimental stage

Preparation

In the early years of Malaysia's independence, the chief educational officers tended to assume their system was far ahead of other nations in the region. But by the mid-70s it was apparent that conditions in rural schools, which the majority of children of Malay ancestry attended, were far from being equivalent to the schools

in the urban centres. The national dropout study of 1973 (Malaysia 1975) particularly dramatized the urban–rural differential in student achievement. Thus Malaysia was searching for solutions to the rural education problem.

Malaysia was a member of INNOTECH, and at the 1975 board meeting, INNOTECH devoted some time to explaining the IMPACT concept and arguing its utility in new settings. Hulman Sinaga, a specialist in curriculum at Universiti Sains Malaysia of Penang, heard of this and realized how IMPACT related both to his interests and the special strengths of his university. Sinaga advised IDRC of his interest and began working on a proposal to introduce a revised version of IMPACT in several schools near Penang.

Dr Pedro Flores, IDRC's program officer in education for the region began exploring the level of interest in the Ministry of Education. Director General of Education Tan Sri Hamdan indicated his interest in the concept, but questioned the appropriateness of a university setting for the project. Matters of curriculum were usually referred to the ministry's Curriculum Development Centre. However, Dr Flores indicated that the other experiments had been based in universities at INNOTECH's suggestion. Eventually, key people in the ministry agreed that a university would provide a good setting for the research and that Universiti Sains Malaysia was the most appropriate for an experiment of this kind. Based on these discussions, Dr Sinaga was encouraged to develop a proposal.

The first proposal was not well received by the Academic Board of the School of Educational Studies of Universiti Sains Malaysia. In the board's view the proposal was too ambitious, and simpler ways could be devised to test the research hypothesis. In deference to the ministry's interest in the project, the board encouraged a new proposal. Dr Koh Tsu Koon, deputy dean of the School of Educational Studies, joined Dr Sinaga and Mohammad Daud Hamzah to prepare a more acceptable proposal.

The revised proposal, completed in mid-1977, laid out a plan for experimentation with programed instruction in rural schools in Perak and Penang. Greater detail was provided on the differentiated instructional strategies for the lower grades, where programed teaching would be stressed, and at the upper grades, where modular instruction would be the main strategy. Ten very broad research topics were listed, possibly to appease the board.

Compared to earlier Southeast Asian plans, the Malaysian proposal was conservative. It would be based on the prevailing curriculum and school organization, including the daily school schedule with its sequence of 30- to 40-minute periods for each subject. The materials developed by the project would go straight to the experimental schools, with provision for pretesting unusual material in laboratory schools near the university.

During the period the proposal was being revised, Tan Sri Hamdan Tahir retired from the ministry and became vice chancellor of Universiti Sains Malaysia (USM). Due in part to his personal interest in the project, now titled Integrated System of Programmed Instruction for the Rural Environment (InSPIRE), the proposal moved quickly through university and central government committees to gain approval in late 1977. Because the project affected the interests of several central and local bodies, two special bodies were set up — the National Advisory Committee to oversee policy matters and the Technical Advisory Committee to monitor the progress of the project. The National Advisory Committee included

representatives from the Curriculum Development Centre and the Educational Planning and Research Division, among other units.

Starting up

Anticipating approval of the project, the USM team quickly selected schools and sought their cooperation for the fieldwork scheduled to begin in January 1979. From mid-1977, the core members of the project held weekly seminars to plan a strategy for the production of new materials. With finalization of the grant in late 1977, the InSPIRE project office was opened on the campus and several of the faculty were released to work on the project. Teachers were recruited from nearby schools for the supervisory and writing positions.

With a full complement of staff in place, the project became bogged down in planning sessions. The Technical Advisory Committee was disturbed by the inability of project staff to begin the production of materials in view of the scheduled implementation in schools by early 1979. Partly to quicken the pace, Dr S. Loganathan, a curriculum specialist at the Curriculum Development Centre, was invited to join the project as Deputy Director. At the same time, he assumed an academic appointment in the Faculty of Educational Studies.

The project leaders succeeded in clarifying the tasks facing the project. A production schedule was established that aimed to have enough teaching guides for grade 1 and modules for grade 4 by January. The schedule was plausible for experienced writers, but it proved too ambitious for the new staff. Some could only realize 20% of their weekly target. The project staff were able to prepare materials to begin the 1980 school year, but during the year the writers, though continuously producing materials, were barely able to keep ahead of the teachers' instructional pace.

An important conceptual development during this period of intensive work was the distinction of three learning modes: teacher mediated, peer mediated, and module mediated. Although the earlier Southeast Asian projects had planned an abrupt shift from teacher to modules at grade 4, InSPIRE planned a gradual transition with some peer mediation as early as grade 1 and module use in grade 2. It should be noted that during the preparatory period the project eschewed all foreign assistance, with the exception of visits by Aida Pasigna and Rosetta Mante of Project IMPACT.

Into the schools

Following a week-long workshop to train the teachers, the new materials were introduced in the schools on schedule. While the grade 1 materials proved effective, grade 4 students immediately had difficulty with the modules. An on-the-spot investigation indicated that fewer than 50% were able to read, an essential skill for this instructional mode.

Meanwhile, the project writers were losing in the race to keep up with the pace of teaching, and the project faced the embarrassment of not having instructional materials for the second half of 1980. To resolve these difficulties, it was decided in April to temporarily abandon the modules for grade 4 and concentrate on teaching guides for the first grade. Thus the project was able to get through the

first school year. Dr Sinaga was given a sabbatical leave from the university in August 1980 and Dr Ghazali bin Othman, also of the Faculty of Educational Studies, took his place as project director.

Despite the differences encountered, the project staff learned much during the first year. Techniques for the preparation of teaching guides improved considerably. Attractive worksheets were developed for each student lesson with cartoons in the corner and clear instructions. The lessons were supplemented with various instructional aids. Staff morale improved and everyone prepared for the second year. In view of the severity of the pupils' reading problem, a revised strategy was adopted of adding only 1 year at a time, so that by 1982 the project would be covering grades 1 through 3. By following through with the same cohort, it was expected that the reading problem could be solved. By the end of 1980, it was projected that funds from IDRC would be exhausted, but the first phase of fieldwork was only beginning. Additional funds were sought from the Ministry of Education.

At a meeting of the Central Curriculum Committee in Kuala Lumpur, the director of education for Sabah developed a strong interest in the InSPIRE approach. He drew the project into discussions that finally led to a USM-supervised experiment with InSPIRE materials in 10 Sabah schools. The Sabah Foundation offered a grant to support this new venture. Soon thereafter the central government also provided a substantial supplement to the project budget.

Just as the project appeared to be gaining a sound footing, the central Ministry of Education announced that the KBSR program would be implemented on a national basis from 1983. This meant that all the materials prepared by InSPIRE would be out of date by the time the full delivery system from grades 1 to 6 was completed. KBSR constituted a major challenge.

Evaluation

Project staff were under constant pressure to meet production deadlines during the first 2 years of the project. Nevertheless, they exhibited a deep commitment to quality and developed an impressive process of evaluating teaching guides in terms of clarity, attractiveness, and conformity with curricular objectives. This resulted in possibly the highest quality materials of all of the six ventures. On the other hand, the project completed little formal research. A major purpose of IDRC's second grant to the project was to promote evaluation research, yet as we will see later, the rush of events once again caused considerable delay in the realization of the research aspects of the project.

Toward institutionalization

In contrast with most of the other experiments, the Malaysian group decided to plan and execute the project on its own, relying mainly on published materials to learn about foreign techniques. Compared with the Philippine and Indonesian experiments, the innovations of the Malaysian team seemed more conservative in terms of their departure from conventional education. On the other hand, the Malaysian group stressed quality, and indeed was highly creative in the type of inputs it was bringing into the classroom.

Because of its slow start, by late 1980 InSPIRE was running out of IDRC money, yet it had only been able to develop materials for the first standard of primary school. The project leaders were anxious to keep going and made an intensive effort to obtain further funding. They were pleased to receive a substantial grant from the Ministry of Education to continue their experiment at 12 schools of peninsular Malaysia, and IDRC agreed to support evaluative research on the experiment. Totally unexpected was a request from the State of Sabah for the project to try out InSPIRE in 10 Sabah schools as a first step toward wider dissemination.

Heartened by this recognition, the InSPIRE staff decided to take on the full range of these responsibilities. During 1981 they completed development of materials for the second standard and during 1982 for the third. According to the original work plan, the next 3 years were to be devoted to completing materials for the upper grades so that a fully operational alternative delivery system would be ready by 1985.

But an important development hit the educational world in 1980. For some time educators had been aware that many children, especially in rural areas, were not being educated up to the expected standard. Following the review of the cabinet committee, Minister of Education Datuk Musa Hitam instructed the ministry to search for a solution. By late 1980, the Curriculum Development Centre (CDC) of the ministry had developed a general concept called KBSR that involved a reduction in the number of subjects taught at the primary level and a new teaching approach whereby teachers would be expected to develop instructional material appropriate for their particular situations. However, in this general concept, there were few suggestions for how teachers might go about this. During 1981, while the KBSR concept was being reviewed by the government, the CDC made some efforts to fill out the concept with broad outlines on appropriate materials. However, in keeping with the new approach of teacher responsibility for instructional materials, the CDC did not specify, nor did it make any effort to develop, materials appropriate for the new curriculum. Because teachers had received training, it was assumed they would be able to integrate the material of three subjects into a single course on language skills, to fashion instructional aids for the various subjects, and to develop appropriate enrichment and remedial materials.

Almost from the moment the new KBSR curriculum was announced, objections were sounded in the newspapers by various groups. The national teachers' union complained that the new curriculum asked far too much of teachers; to conscientiously follow it, teachers claimed they would have to stay up working until two o'clock every morning. Chinese-speaking teachers complained that they had difficulty following the guidelines, as they were written only in Malay. Indeed, some from the Chinese community charged that this was an escalation of the discriminatory policies against Chinese by the Malay-dominated ministry.

The ministry realized that it had a major problem on its hands and seemed to try to develop some distance from it by having the CDC, which had developed the new curriculum, respond to the criticisms. The CDC took an essentially inflexible attitude arguing that the new curriculum was definitely better for students and was easily implementable if everyone cooperated. For a trial experiment, the CDC selected 302 schools to test the curriculum over the 1982 school year. Midway through this experiment the CDC announced that all seemed to be going well, that

the new approach had proved functional, and hence that it would be implemented on a national scale from 1983, starting with the first standard and adding a new standard every year.

These developments created a major problem for the InSPIRE project. If they continued with the development of materials based on the old curriculum, they would be able to finish their experiment on peninsular Malaysia and evaluate its effectiveness. But then, even if the experiment proved successful, it would have no relevance as the materials were based on the old curriculum. But if development of materials according to the old curriculum was discontinued, the experiment would have to start again. After much deliberation, the InSPIRE group decided to continue with the development of the old materials so as to complete the experiment at the lower primary level, and to develop new materials following the KBSR curriculum so as to fulfill one of the conditions of its funding.

During 1982, the InSPIRE team worked feverishly to achieve these objectives, and by the end of the year had enough materials both for the first year of KBSR and an additional year based on the old curriculum. Clearly an extraordinary effort was devoted to the KBSR materials: one result was a special kit for English language lessons. In a box of about 0.25 m^3 were placed all the materials a typical first grade class of 50 would require, including programed teaching guides telling the teacher how to teach each subject each day, teaching aids prescribed by the guides, cassette tapes, block tests for the conclusion of each teaching unit, and a 6-month test to conform with official requirements for mid-year evaluation. Also in the box were selected remedial materials and a reading disability diagnostic test. Compared with the virtual dearth of materials supplied by the CDC, the KBSR kits looked very attractive to those who heard about them. While faithful to the objectives of the KBSR curriculum, these materials would help solve most of the preparation problems of teachers, leaving them with the more straightforward task of teaching according to the precise instructions of their teacher guides.

The new KBSR-InSPIRE materials were immediately introduced in Sabah. However, for the experimental schools on peninsular Malaysia, the team debated whether to continue with the old InSPIRE materials written according to the previous curriculum or to introduce the new materials. The former would preserve the integrity of the experiment, but the children would be following a different curriculum from their peers. A third alternative, not seriously entertained by the project, would have been to declare the experiment over for the first graders and allow their teachers to follow the guidelines of the ministry. Reasoning that the first graders in the experimental schools should have the same chance as first graders in other schools to follow the KBSR curriculum, the team decided to introduce the KBSR-InSPIRE materials in the peninsular Malaysian schools as well. Doubtless, the project team also realized that the introduction of their materials in peninsular Malaysian schools would allow a wider group of educators to appreciate the merits of their approach and materials.

Thus from January 1983, first-grade classes throughout the nation were following the new KBSR curriculum. Within weeks, serious complaints began to appear in the press about the inadequacy of instructions provided by the official guidelines and the lack of appropriate materials to realize the KBSR curricular objectives. In this context, some educators and newspaper reporters made specific mention of the availability of KBSR-InSPIRE materials, asking why other schools could not be provided with the same.

Over the next months, the ministry did its best to fend off these criticisms. Unwilling or unable to admit that it had been rushed too quickly into the KBSR experiment by political factors and hence had not had time to properly prepare, the ministry sought to emphasize the positive side of its approach. It argued that properly trained and conscientious teachers preferred a situation where they were not excessively constrained by textbooks and detailed lesson objectives. Reference was also made to the success in 1982 of the tryout schools: why couldn't the rest of the nation's schools follow their example? At the same time, some sections of the ministry sought to minimize the exposure of KBSR-InSPIRE materials. Arguing that the KBSR-InSPIRE materials made teachers into robots and thus defeated the KBSR objective of liberating teachers to develop their unique teaching styles, a decision was made to restrict these materials to Sabah.

At the same time, sections of the ministry sought to reshape the goals of the InSPIRE project so that it would no longer be a basis for comparison. Praising the technical innovativeness of the InSPIRE team, they urged InSPIRE to devote its energies to developing remedial and enrichment materials to supplement the main thrust of the KBSR approach. The InSPIRE team appreciated the political sensitivities involved, and was not anxious to alienate the ministry because it would need new funding from the ministry and/or Sabah to continue its activities. Through repeated trips to Kuala Lumpur, university officials sought to assure the appropriate ministry officials of their cooperative attitude, and, as one manifestation, agreed to take on the task of developing enrichment and remedial materials.

Nevertheless, the InSPIRE team firmly believed in the effectiveness of its overall approach and continued to allocate a portion of staff time to the development of KBSR-InSPIRE materials for grade 2 and above. While the team said these were for Sabah, they hoped they might eventually be distributed to schools on peninsular Malaysia as well. While the InSPIRE team did not openly promote their materials, groups of educators and newspaper reporters repeatedly referred to them as a preferred alternative in their criticisms of KBSR. Moreover, by mid-1983 various commercial establishments were developing teaching aids and worksheets modeled on the KBSR-InSPIRE example.

An opportunity to clarify InSPIRE's role was provided when the Ministry of Education decided to convene a meeting in Penang to discuss the enrichment and remedial materials developed by InSPIRE. The meeting was chaired by the deputy director general of education and attended by all key personnel responsible for the implementation of KBSR in each state. An exhibition of materials was also held so that the key personnel would have an opportunity to examine critically the project materials. It was decided at this meeting that Project InSPIRE should concentrate on developing graded remedial and enrichment materials not only for national schools but also for Chinese and Tamil medium primary schools.

In February 1984, another meeting was held in Kuala Lumpur to discuss the role of InSPIRE within the KBSR framework. The meeting was chaired by the director general of education who recognized the need for the continued existence of InSPIRE. He approved testing of the full package in peninsular schools for research purposes, provided that the schools were keen to participate in the full experiment and were prepared for intensive monitoring. This meant that, as it developed the remedial and enrichment packages, the project's major focus would be on research and development.

Our account thus far has focused on peninsular Malaysia but much of InSPIRE's success there depended on the materials it was providing for Sabah. Throughout the period of change on peninsular Malaysia, the project enjoyed appreciative moral support in Sabah. From the beginning, the director of education in Sabah was highly supportive of InSPIRE and sought to disseminate it as rapidly as possible. The original Universiti Sains Malaysia team indicated its preference for a modest project, as it could not deploy resident manpower in Sabah and because there were major logistical obstacles to the timely delivery of materials. These were reasonable objections. At the time the Sabah connection was established, only the project director really understood the full range of procedures and it was not until 2 years later that the project had a sufficient number of knowledgeable people that some could be spared. In the original plan the materials were to be produced in Penang, but then they faced a 1600-km journey by air, which was very expensive, or by sea, which could take a very long time especially during the monsoons. A large project would multiply the problems inherent in both producing and shipping the materials, so the original agreement was to work with only 10 schools.

The InSPIRE team carried out its teacher-training program in 10 schools and began supplying sufficient materials for these schools. From the outset, Sabah's director of education instructed his deputy to reproduce the materials as they came in for supply to seven additional schools where teachers had not been trained. At the end of the year an evaluation suggested that student performance at both sets of schools was comparable and, moreover, that it was superior to performance in schools that had not received the KBSR–InSPIRE materials.

From the second year, Sabah pressed for more materials so that InSPIRE could be introduced in more isolated areas of the province where, for example, a school might be accessible only by boat and consist of only one teacher and 50 students. The InSPIRE head office emphasized its limitations in providing all the requested materials on schedule, so Sabah proposed to reproduce a certain proportion on its own; this enabled a significant expansion of InSPIRE's dissemination in Sabah. The great irony in this arrangement was that Sabah, a major producer of timber, had no pulp or paper mills. Thus it was 50% more expensive to reproduce InSPIRE materials there than to have them flown in from Penang!

By 1983, it was reported that InSPIRE materials based on the old curriculum had been delivered to some 77 schools. Also, it was from 1983 that the KBSR-InSPIRE materials were brought to Sabah and introduced in 17 additional schools. Thus InSPIRE was having a major impact on sparsely populated Sabah and was appreciated by those directly involved with it.

Yet InSPIRE in Sabah faced three types of problems. First, it lost its original supporters. Datuk Mohammed Hussein, director of education, was transferred in July 1981. In 1983, Jumali Kassan, the deputy director, was transferred to Perlis with a promotion to director of education. Second, InSPIRE had to produce a fresh proposal for a second grant from the Sabah Foundation, the major funding authority for the extension project in Sabah. The extended budget would cost the Sabah Foundation about USD 6 million, but prevailing economic conditions prevented immediate approval of this budget. The Sabah Foundation asked InSPIRE to revise and trim its budget to USD 3.9 million, and this caused considerable delay in the second phase of the project. Third, the Sabah Department of Education's very able project liaison officer felt the time was ripe to press

for some changes in the USM–Sabah relation so that Sabah could assume greater authority over certain aspects of material design and production. He may have advised the foundation to hold off on support until USM accepted these conditions.

For these various reasons, the extension was not approved until April 1984, leaving the project in limbo for several months. But with the new funding from Sabah and the new understanding project InSPIRE has achieved with the Ministry of Education, it now seems poised to make a significant and enduring contribution to the quality of Malaysian education.

Malaysia combines a relatively open political system with an unusually formalistic public bureaucracy. InSPIRE's innovations were modest in scope but were released at an unusual time in the history of Malaysian educational reform. Just as the InSPIRE approach began to take shape, the central government introduced the new KBSR curriculum. Some groups of educational consumers began to compare the government's new reform unfavourably with the InSPIRE approach. This comparison was not appreciated by certain government officials and, thus, InSPIRE encountered many obstacles. Project leaders and supporting university administrators exerted their best efforts of persuasion and compromise to ensure the project's continuation. Ultimately their efforts were rewarded with a favourable reception both in the central government and in several local governments. This resolution was only achieved in mid-1984, so the project's long-range impact cannot be estimated.

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Jamaica's PRIMER

Soon after the beginning of Prime Minister Michael Manley's second term, IMPACT was introduced in Jamaica by an idealistic group of educational reformers including the minister of education. The new project, Project for Reshaping and Improving Management of Educational Resources (PRIMER), got off to a rapid start, but equally rapid changes in the broader political context and weaknesses in project organization gradually eroded its prospects. At the end of the experimental phase, the project was put on hold where it remains today. The insights derived from the project are certain to have some influence on Jamaican education, especially in the development of curriculum. However, relative to the other cases described in this study, the Jamaican project was least successful.

Background

Structure of government

Jamaica instituted an electoral system upon achieving independence from Great Britain in 1962. Sir Alexander Bustamante, the former governor-general, became the first prime minister, and promoted a laissez-faire form of liberal democracy for 10 years. In the third national election, he was hotly challenged by Michael Manley of the People's National Party. Manley won that election and gradually introduced a series of welfare-oriented social reforms. In his second term, Manley turned to education and at this time Project PRIMER was begun. However, Manley's passion for new programs resulted in excessive spending, which contributed to a downturn in the Jamaican economy. Thus, his popular support declined and, in 1980, Manley was displaced in a national election by the

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old Bustamante party, now led by Edward P.G. Seaga. During the brief period of Jamaica's experiment with Project PRIMER, there were five ministers of education.

Administration and organization of education

Jamaica shares with Malaysia an English colonial heritage and commitment to the English curriculum and examination system. The colonial government was satisfied with a minimal structure and relied to a considerable degree on private funds for its maintenance. Thus private schools assumed much of the burden, especially for secondary education. Even in the case of government schools, public funds covered only teacher salaries, buildings, and some maintenance. School boards were the statutory bodies responsible for individual schools and, in addition to having authority over the recruitment of personnel, these boards established policies for augmenting school revenues such as tuition and community fairs. A small elitist system developed in which individual schools enjoyed considerable autonomy.

At independence the Jamaican government sought, without violating the traditional institutions or assumptions, to establish greater uniformity in the system and to extend educational opportunities to a wider cross-section of the population. During the first decade of independence under Prime Minister Bustamante, education was not a top priority, but with the ascendency in 1972 of Michael Manley's People's National Party, it gained in importance. Whereas earlier policies had emphasized secondary and tertiary education, the Manley government recognized the need to strengthen primary education. Education's share of the national budget steadily increased, and as a proportion of GNP it reached the unusually high level of 9.9% by 1980.

The Manley period led to an exciting national discussion of a wide range of social issues. The government saw education as a vehicle for personal development and for inculcation of a revolutionary consciousness. However, the opposition objected to the use of education to promote radical political values. Toward the end of the Manley period, debates on this and other issues became shrill, polarizing the electorate and nearly leading to civil war. While the political system was preserved in the 1980 elections which transferred power to the opposition, the economy was in difficulty. Plans for the improvement of education, which had been drafted in the mid to late 70s, had to be suspended and it can be said that support for project PRIMER also suffered during this period.

The basic structure of education in Jamaica involves 6 years of primary school and 2 years of secondary school, all essentially free. These are followed by academic courses to prepare for the O-level and then the A-level examinations. At the top of the system is university education either at the local University of the West Indies or overseas.

In rural areas, one important variant of this basic structure is the "all-age school," a nine-grade school which structurally combines the 6-year primary course and an extended lower secondary course. The all-age school is of special significance in this account, for it was there that the PRIMER experiment was introduced. The original intent of the all-age school was to combine the two levels in a single small school, to cut down the distance rural youth had to travel for education. However, it is generally recognized that the upper grades of the all-age

school do not provide as good an education as the separate lower secondary schools. Able students who have the means tend to move out of the all-age schools after 6 years; the few bright ones who stay in the all-age schools succeed in the exams for upper secondary entrance during their eighth year. Hence, those in the ninth year of the all-age school tend to be earnest students who are short on ability.

Curriculum

The basic curriculum in Jamaica is very similar to that found in England. The country is so small that the government has not considered it economical to produce indigenous texts. The official curriculum outlines subjects to be covered and lists recommended texts. In most schools, teachers choose the texts and it is up to students to purchase them; needless to say, in rural areas many children cannot afford to buy a full set of books. For some subjects, schools may rely on texts written by the West Indian consortium; for others they may recommend British versions.

Personnel

The autonomous tradition of school management means that each school is responsible for the recruitment and, when deemed necessary, the dismissal of its teaching staff. Soon after independence a teachers' union was formed to seek greater job security and other benefits and made some progress. Now the government pays the salaries of the majority of teachers. However, despite the government's heavy investment in education, teachers' salaries are modest and working conditions are not very attractive. At the primary level, the student–teacher ratio is 39 to 1 and many schools are located in isolated rural areas. Low salaries and difficult conditions, combined with rapid school expansion during the 70s, have made it difficult to attract qualified teachers; thus nearly half the teachers at the primary level have only a normal secondary degree and have not attended a teacher-training course.

The experimental stage

Preparation

From the earliest days of the Manley government, Jamaica began to look at the quality of its education system. The survey of the education sector, commissioned immediately after Manley took office, argued that previous governments had stressed secondary and tertiary education, but "the major weakness in the system is to be found in the generally neglected and poor-quality primary schools which have not received anywhere near the inputs provided at the secondary level over the past decade" (Miller and Murray 1973). This report went on at some length to document the lack of basic materials at the primary level, the inadequate training of teachers, and the high absentee rates for students. It observed, "students are not entering the secondary system with the equivalent of a sixth-grade education" (Miller and Murray 1973:10). The same themes were echoed in the *Report In-Depth of Primary Education in Jamaica* (Jamaica 1974) prepared in late 1974 by George Murray, former secretary of education.

USAID was one of the first outside donors to offer assistance to Jamaica at the primary level, first with curriculum development (1972–75) and then from 1976 with a USD 22 million rural education project. While major quantitative improvements were achieved during the years of Manley's first term of office, the 5-year plan prepared in 1977 under Eric Bill, who was selected to head education in the cabinet for Manley's second term, stressed the continuing problem of low quality at the primary level (Bell 1977). It was while this latter report was being completed that Jamaica first heard of Project IMPACT. During a conversation between Professor Errol Miller of the University of the West Indies and Ruth Zagorin, head of the Social Sciences division at IDRC, Dr Zagorin explained the nature of the Philippines IMPACT experiment and suggested it might have some relevance for Jamaica. Professor Miller relayed this idea to his contacts in the Ministry of Education, who asked IDRC for more information. IDRC responded by offering to send a small group of Jamaican educators to review the ongoing experiments in Southest Asia.

Within weeks, a study group, including the minister of education and five other top officials, was off to Southeast Asia (October 1977). The group returned favourably impressed with certain features of the Southeast Asian experiments, but also recognizing that it would be difficult in Jamaica to replicate fully the Philippine experiment. Specifically, they considered it unwise, given the concerns of the teachers' association, to propose increasing the student–teacher ratio. Also, given the formalism of the Jamaican curriculum and its links to the English examination system, they cautioned against the integration of subject matter or extensive reliance on modules. The main features that appealed to them were the community involvement in schools, the apparent self-confidence of students (which they associated with the tutorial approach), and the reported high academic achievement of students. The group apparently approved of community involvement because it was consistent with the radical grass-roots philosophy of the Manley government. In contrast, the attraction of tutors was based at least in part on memories of prefects in the schools of the colonial period. The task of summing up these views and preparing a project proposal was turned over to Lola McKinley, one of the tour members who had served as curriculum specialist in the ministry for over 10 years.

The proposal completed in early 1978, named the experiment Project for Reshaping and Improving the Management of Educational Resources (PRIMER). It emphasized three themes: student achievement, student self-confidence, and community involvement. The document made extensive reference to objectives one expects from any primary education system, including "to evaluate the existing primary school curriculum," "to provide a systematic diagnosis of the problems of teaching and learning in the rural parts," and "to develop a system that will provide all children with functional basic literacy, numeracy and learning skills" (Sinaga et al. 1978). Reference also was made to programed materials and self-teaching modules, a community learning centre, and tutors, but the extent to which these would be emphasized was not detailed. While the experiment was intended "to develop and test an effective and economical delivery system which will reduce costs," the specific cost-saving elements were not spelled out. The proposal sought CAD 542 000 for 4 years, to be matched with CAD 600 000 from Jamaica to support a project office in the Ministry of Education for curriculum analysis, materials development, and experimentation in a rural area near Mandeyville, some 160 km away. In contrast with the Southeast Asian experiments, no

direct link was established with a higher educational institution, although a major teaching college was located only 16 km from the project site and the University of West Indies, the premier centre for educational research, was located in Kingston not far from the central project office.

Despite the vagueness of the proposal in terms of the proposed interventions and their relation to both cost saving and learning effectiveness, IDRC saw the Jamaican venture as similar to IMPACT and welcomed the opportunity for a trial in a cultural setting that was radically different from Southeast Asia. The grant negotiations were virtually completed by June 1978, when a number of changes occurred in the top-level administration of the Jamaican government. At the Ministry of Education, only Lola McKinley among the core group responsible for PRIMER retained her post. Even before it started, the project lost the well-placed patrons who could have guaranteed its success. The new administration required time to act on the inherited proposal.

The agreement was finally completed early in 1979, and Lola McKinley assumed the project directorship in April 1979. She was to report to a national steering committee consisting of representatives from the Ministry of Education, the Ministry of Health, the Jamaica teachers' association, and the area selected as the project site.

Starting up

With the start of the 1979 school year only 4 months away, project staff decided that in the first 18 months, until September 1980, they would concentrate mainly on curriculum analysis, development of programed materials, and training of teachers and community members. Dr Rosetta Mante of the Philippines' IMPACT project visited in December 1979 to advise the project team in their preparations. At that time, they were just finishing the curriculum analysis and commencing the development of new instructional materials. The curriculum analysis had shown that the ministry's existing curriculum guidelines, for all subjects except mathematics, were too scanty to be of much use in preparing programed materials. As the project had to develop its own guidelines, it was soon behind schedule. Originally the thought of adapting the Philippine materials to the Jamaican context was entertained. While this might have saved time, the project staff soon concluded that the Philippine materials placed too much emphasis on rote learning whereas they wished to stress problem solving.

The selection of the project site had been based primarily on a political decision; Mandeyville was the seat of the prime minister's brother and he, upon hearing of the project, had requested its placement there. The area filled many of the requirements, being one of the poorest in Jamaica with rural schools that had the full array of problems. However, it was physically and culturally quite removed from the Kingston-based project office, and this distance proved a persistent obstacle to effective communication. The early project reports indicated that the Kingston-based staff had difficulty in comprehending the rhythm of life and the constraints on education found at the site. As one illustration, the first materials prepared exceeded student ability.

To determine the particular schools for the experimental intervention, Mrs McKinley interviewed several of the principals who expressed willingness to host the experiment. She selected the schools of the five principals who seemed to

have an innovative outlook. The schools, it should be emphasized, were of simple construction, typically with two large rooms shared by several classes. Only one school had electricity; libraries typically had fewer than 100 books.

For the purposes of later evaluation, five other control schools that had similar characteristics were identified. Several workshops were held in the spring to acquaint the teachers at these schools with the nature of the proposed interventions. Before the introduction of the new materials, the teachers, many of whom were only "pretrained" (secondary level degree plus a short teacher-training course), received only 10 days of orientation to the new approach envisioned by the project.

The first 9 months of 1980 were certainly the project's most dynamic and euphoric period. The project staff threw their total energy into completing the necessary materials for programed teaching for all subjects of grades 1–3 and self-instructional modules for four subjects of grades 4 and 5. Tests administered to fourth graders at the project schools indicated that only 20% were reading at grade level, so a plan for a remedial reading course was proposed for this level. Also, as no one could be recruited to supervise the writing of self-instructional modules, the work on these was cut back. The major thrust was on developing programed teaching guides and instructional aides for the lower grades. Even so, by September the preparation of the planned materials was far from finished, and the project leader briefly contemplated postponement for a year.

To prepare the communities who were sending children to the four schools, a special celebration was held on Labour Day, May 23. In addition to explaining the project's objectives, community members were recruited to work on the grounds at the schools. Subsequently, community education was promoted through the PTA and the schools were decorated with special murals.

The summer months of 1980 were a tense period for Jamaica as national elections approached. The socialist government of Michael Manley was replaced by a liberal government under Edward Siaga, and once again the Ministry of Education was reorganized under a new minister, Dr Mavis Gilmour, who had been a practicing medical doctor. The new minister expressed her support for the project and later, in December of 1980, she attended a ceremony at the schools to officially launch the experiment.

Into the schools

With the coming of the new school year in September 1980, Project PRIMER narrowed the scope of its intervention. The initial plan had included programed instruction in all subjects, relying on tutors for grades 1 to 3, and experimentation with self-instructional modules for language and mathematics in grades 4 and 5. Teacher workshops, held during the summer, suggested there would be considerable resistance to these changes. Exploratory investigations indicated that few of the fourth graders would be able to handle the self-instructional materials, so the plan was cut back considerably. For the advanced grades, the only intervention for the initial years was the introduction of Marching On, a remedial reading course developed by the project. At the lower grades, the use of tutors was to be left in considerable degree to the discretion of teachers.

During this period, the project (partly out of necessity) developed the philosophy that it would leave to each school and teacher the final decision on which

components of the various interventions would be used. This philosophy was consistent with the participatory grass-roots thinking characteristic of the late Manley period. But it certainly conflicted with the experimental design of introducing a specific and uniform program to the experimental schools.

Despite the reduced and flexible format, the project encountered a number of setbacks. The teachers at the project schools were not specially recruited for the project and many, once they began working with the new materials, quickly expressed their disapproval of the bother created by the project. Aggravating their complaints were problems in getting the appropriate materials to each school on time. Given the autonomous character of Jamaican primary schools, the project had little leverage over the reluctant teachers. Also, as most of the project staff lived 160 km away from the project site and visited it infrequently, they were not always able to establish a good working relationship with the teachers and principals. During the brief 3-year period of the experiment, over one-third of the original cohort of teachers quit; the project staff were not always able to provide their replacements with sufficient training in the use of the new materials and procedures.

Although the students selected to carry out programed tutoring were in the eighth and ninth grades, many lacked the reading skills to clearly grasp their tasks. To improve their performance, those teachers who continued to make use of tutors organized special briefing sessions each day to familiarize the tutors with their tasks. Ultimately, this experimentation with tutors was to prove the project's most remembered legacy. But many members of the community began to question the value of the project as the months passed and still they saw no signs of the promised improvements in the physical structure of their schools.

Despite the many difficulties encountered during the first year, the project renewed its determination for the second year and sought to broaden the intervention with the introduction of self-instructional modules. Modules were provided only for mathematics and language, and only the minority of students with recognized reading ability were allowed to use them. In principle, the students using the modules were supposed to cover the material in the same time and in the same sequence as the rest of the class who received instruction from their teacher. In many instances, the teachers were reluctant to leave the former group alone, so their learning was not always self-instructional.

During the second year, half the writing staff left the project. Those who remained attempted to fine-tune the materials. According to the project director, the original materials had been pitched too high and the first rewrite aimed too low. In a second rewrite the materials were to have been diversified so that teachers could stream their students into different ability groups. This goal, more ambitious than any other IMPACT projects had attempted, must have been difficult to realize with the reduced writing staff.

The third year, 1982–83, was used to consolidate the experiment. The full range of new materials that the project office had been able to develop was now in the schools, and most of the teachers were familiar with the new classroom routines. A supervisor who had caused much ill-will was replaced, and the relations of teachers with the project staff improved somewhat. Yet, in the eyes of at least one visitor, the overall impact seemed minimal (Stromquist 1982:7).

> One has to look very hard to detect the innovation in use within project PRIMER. The modules are certainly there and so are the teacher curriculum guides. However, although project teachers have been trained and receive a good deal of support (including visual aids, extra paper and chalk, and frequent helpful visits by the field coordinator), few teacher behaviors distinguish experimental from control schools. The emphasis on teacher directed learning and group-level rather than individual pace continues.

This observer suggests the project might still promote more learning than the control schools, simply because it introduces, through new materials, tutors, and a better organized curriculum, a more stimulating learning environment.

Evaluation

At the start of the project, a relatively inexperienced person had been recruited for research. This individual left the project in 1981, and thereafter the project director sought the assistance of the College of Education at the University of the West Indies (UWI) to carry out an evaluation. Eventually, three independent studies were commissioned: an evaluation of student achievement at the end of grade 3 to assess the effectiveness of programed teaching, one at the end of grade 4 to assess the effectiveness of the self-instructional modules, and a study of the tutorial system relying largely on ethnographic methods. The project director initially wished to include a cost-effectiveness analysis, but abandoned this idea after realizing that the project schools were actually more expensive than the control schools because of the extensive materials they received.

The evaluation studies, begun in 1982 were all competently, albeit leisurely, executed; the last was not completed until February 1984. For the third graders, special tests in general (learning) skills, arithmetic, and language were prepared by Ian Isaacs of the UWI School of Education and administered in June 1983; no significant differences were found between the control and experimental schools. For the fourth graders, Dr M.C. Mitchelmore administered before and after tests in mathematics and language, the two subjects for which the experimental schools used modules. He concluded that there were no significant differences between PRIMER and control schools in the gain scores for these two subjects (Mitchelmore 1983a, b). Especially interesting are Dr Mitchelmore's (1983b:9) interpretive comments:

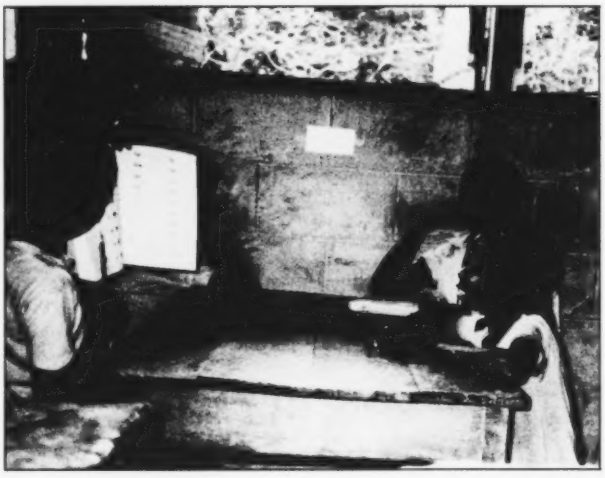
> This result should not be understood to imply that students did not benefit from Project PRIMER. There may have been untold gains in other variables such as oral skills or independence which this study did not attempt to measure, and the help which PRIMER teachers received from the project team must surely have led to improvements in their teaching whose results could have been widespread but too small in the short term to be measurable. Furthermore, one major component of the PRIMER philosophy — individualized instruction — was not given a fair trial in that less than a third of the students were able (or were allowed) to work individually. It is a pity that the research design did not allow these students to be compared directly to a control group, because there is good evidence that they made substantially greater gains than those students who only worked in a large-group mode.

The ethnographic assessment of tutors provided an especially revealing picture of the experiment. The body of the text is filled with rich comments and observations from which we can select only a handful (Wood 1983):

> How do tutors behave towards tutees? Quite well, on the whole, would be the short answer. A cuff here and a pinch there were also seen, but these are commonplace, given the way Jamaican children treat each other.
>
> Actually, tutoring can serve many purposes which can be lumped under the heading "personal development." It can build confidence and self-esteem — "the children are nice to me" — which can be fuelled by the award of prizes, and it can provide roles and opportunities for modelling, even if this is sometimes exaggerated. In these respects tutoring can certainly help the low achiever and the student with behavioral problems; it can provde a career try-out for teacher.

This insightful report noted that the "judicious use of older children to assist the teacher in attending to younger children can be effective in promoting learning in Jamaican schools." But it concluded that the full potential of tutoring was not realized in PRIMER, because there was a lack of clarity about the objectives of tutoring, "complicated by confusion about the objectives of PRIMER itself" (Wood 1983).

Project PRIMER faced many difficulties, not the least being the confusion over objectives. At the outset the project lost its political base in the Ministry of Education. Then, the political and economic situation deteriorated, so that there was virtually no hope for the project to catch on. Finally the project staff were too distant from the experimental schools and held unreasonable expectations for the schools. In a sense, the project's inputs were so complex, involving different treatments for students of different abilities and allowing each teacher to pick and choose the interventions, that the overall intervention never achieved a coherent shape. Given the circumstances, it seems remarkable that the project was ever completed. But by that time, while the morale at some of the project schools was reasonably high and some teachers felt they had profited from the experience, the project team was exhausted. In 1983, at the end of the grant period, the steering committee decided to discontinue the project and await the results of the three evaluation studies before considering a next step. The evaluations were sufficiently bleak that the project will, in all probability, be terminated. One hopeful sign for the long-term influence of the project was the promotion of the project director to head of the Curriculum Unit within the Planning Division of the Ministry of Education. While the project itself experienced difficulties, there is some agreement that it provided a useful stimulus to Jamaican approaches to primary education.



7

Liberia's IEL

Liberia was the first African country to experiment with the IMPACT concept, and also the first to do so with support from sources other than IDRC. The Liberian project spanned a dramatic period of political change and economic difficulty. Toward the end of the experimental period, the project's reputation was fast declining. But through decisive actions on the part of the central committee monitoring the project, a special reevaluation was commissioned which placed the project in a more favourable light. Currently, the project's prototype is poised to become an important component in the national educational system, and is being studied for possible adoption by nearby countries.

Background

Structure of government

Liberia was established in the early 1800s by the American colonial board to repatriate freed slaves to Africa. While Liberia formally declared its independence from this board in 1848, the American connection has continued to be strong as evidenced in the use of U.S. dollars as the national currency, the extensive involvement of American corporations in the plantation economy, and the reliance on English as the official language.

During the course of its experimentation with IMPACT, the Liberian government experienced the most abrupt change of these six countries. The Afro-American Party there had dominated electoral politics for several decades. In 1971, on the death of six-time President William V.S. Tubman, his vice-president, William B. Tolbert, Jr., was selected as president. During the years of Tolbert's

reign, the country prospered and the government began to devote serious attention to development issues, including education. But from the late 70s, partly because of the world recession, problems began to mount as did local protest. The government's heavy-handed attempt to curtail this protest ultimately provoked a military coup. Since then Master Sergeant Samuel Doe, who led the coup, has been head of state. This abrupt change resulted in a vacuum in bureaucratic leadership for several months while the new president selected his staff. Although there were many changes at the Ministry of Education, Othello Gongar, Deputy Minister for Planning and Development, continued in his post and served as ministerial liaison for the Improved Efficiency of Learning (IEL) project.

Administration and organization of education

While Liberia has been independent longest of these six countries, the Liberian government did not take a strong initiative in education until very recently. The earliest schools were established largely by foreign missionary groups and tended to be located in urban areas serving the Afro-American group. The first teacher-training school was established only in 1920.

Given the American heritage of the elite group and their aspiration to send their children to the United States for higher education, the system has developed an American form. Six years of primary school are followed by 6 years of high school and then tertiary education. Many of the better high schools, especially in rural areas, have boarding facilities to accommodate children from distant places.

From the 60s, the government's interest in education increased, mainly due to the influence of donors. Efforts were made to expand educational opportunities, especially at the primary level. Thus, whereas only 31% of the primary-level age cohort were enrolled in 1960, by 1980 67% were enrolled. Much of the expansion was in rural areas and had to confront low population density and, in some areas, the pattern of shifting residency due to slash-and-burn agriculture. As a result, many of the new rural schools had less than 100 students.

In the mid 70s, interest in education was once again kindled. A national education survey was carried out which showed wide regional disparities in school attendance: for example, 36% of the primary age population of Montserrado County (where the capital is located) attended school, compared with only 14% for Bong County. The survey also indicated that 60% of the teachers were either unqualified or underqualified, and that over half the schools did not have a syllabus. The survey concluded that "the challenge for the future is clear and enormous. Given the high rate of population increase of 3% per annum, growth of opportunity for education becomes increasingly unsustainable and unmanageable" (Liberia 1979a:22). The recognition of these harsh realities disposed the Liberian government to take on the Improved Efficiency of Learning (IEL) project.

Curriculum

In principle, the Liberian Ministry of Education prepares curriculum objectives, but, as of 1979 when IEL came to Liberia, there was only the barest outline of what the government felt should be taught in the schools. Government guidelines specified the subjects to be taught, but indicated very little about what material should be covered. The government had no capacity to write or produce

textbooks, nor was there a local commercial publisher involved in textbook writing and publishing. Schools were left essentially on their own to select and procure texts. Established schools, especially those backed by religious groups, drew on international connections to keep up a stock of traditional texts. However, in most of the newer government schools, as there was no budget for texts and the market price was out of reach of most families, education was essentially conducted without texts. World Bank Education Project Number Four, which began in 1981, was especially focused on providing textbooks for primary schools.

Personnel

Before government involvement in education, individual schools were responsible for recruiting and paying teachers. With the increasing interest of the central government in education, regulations have been issued concerning standards for qualification and level of pay. For the public schools, the central government now has responsibility for selecting and paying teachers. However, with limited funds, the government has great difficulty in meeting this responsibility.

At the time of the fieldwork, the Ministry of Education had issued an order requiring all teachers to register in person at Monrovia as a precondition for receiving their salary. As a result, many teachers were leaving their schools for several days to make the registration trip; others were coming to seek their monthly checks. Teacher absenteeism was, therefore, distressingly high.

Over 60% of the nation's 9000 teachers are untrained. The student–teacher ratio was estimated in 1980 to be 54:1. To maintain this ratio and provide sufficient places for the new cohorts of primary eligibles would require 600 new teachers annually, yet the teachers' colleges turn out less than half that many. And because the government is slow in paying teachers' salaries, many trained teachers prefer other jobs. It seems that the quality of teachers is likely to get worse before it gets better.

The experimental stage

Preparation

Midway in the Tolbert presidency (1972–80), USAID-Liberia began discussions with the Liberian Ministry of Education which led to a sector study in 1974–75 by the Harvard Institute of International Development (see Liberia 1979a:22). This study demonstrated the virtual absence of educational facilities in many parts of rural Liberia, the overabundance of unqualified and underqualified teachers, and at the same time the difficulty of rapid improvement given the scarcity of teacher-training facilities and the rapid increase in population. These themes were echoed in *The National Education Survey 1978* (Liberia 1979a) and *The National Education Plan, 1978–1990* (Liberia 1979b) prepared by the Liberian Ministry of Education. The latter document stressed as a top priority "to provide universal basic education through the formal and nonformal process, so as to help the masses improve their living standard and tackle the immediate problems of literacy, sanitation, food production and preservation" (Liberia 1979b:11). Consciousness of these problems set the stage for consideration of a large-scale USAID action.

In the preliminary USAID planning initiative document, which was based on discussions with Liberian officials, the intention was to support the conventional system especially through improving in-service teacher training; in addition pre-service teacher training was to be strengthened and a system for the distribution of educational materials to rural areas was to be developed. Subsequently, Nancy Tumavick of USAID-Liberia heard of USAID-Washington's interest in Project IMPACT, and began discussing this approach with local officials. In response to the local interest, USAID sponsored a trip for nine key Liberian officials to look at IMPACT and the other Southeast Asian experiments. Included in the mission was Mrs Christine Tolbert Norman, Deputy Minister for Instruction, who also was the daughter of the president.

Unfortunately, the group arrived in the Philippines when the IMPACT schools were in recess. But they gained a positive impression of the possibilities of the IMPACT system as a way of expanding rural education at a lower cost. The Liberian group was especially attracted to the programed instruction component, believing that, through its development, the curriculum could be Liberianized; also they recognized that programing would provide a more systematic learning environment than was currently available in most rural schools. However, they had reservations about peer-tutoring, believing that in their setting the teacher should be the key. Also, whereas most of the Philippine teachers were college educated, most of Liberia's rural teachers were unqualified or underqualified. These and other differences in national context suggested the need for substantial modifications.

Meanwhile, other local officials assumed that the USAID support was intended for strengthening the traditional system, and began to question the wisdom of spending so much money on an unknown delivery system while doing nothing for the system that was already in place. Given the low quality of the conventional system, these arguments did not carry much weight. But token acknowledgement was made through the inclusion in the project of one position for a consultant in teacher training, as well as a major commitment to evaluation of the experiment before moving on to wider dissemination.

These various concerns were incorporated in the USAID project description of late 1977 for an experiment in Improved Efficiency of Learning (IEL). The USAID document (Ellson et al. 1977) asserted that the IEL schools would increase learning by 50% and attendence by 40% while at the same time reducing cost. These achievements were to be validated by an extended evaluation to be designed at a later stage. Later, USAID recruited an external evaluator who proposed a design for comparing the IEL schools with two control groups of schools, relying on the West African Examination Council (WAEC) for the research.

In its successful bid for the IEL project, the contracting firm, Institute for International Research (IIR), proposed to provide a technical team led by a chief of party, while Liberia would provide a project director and several local personnel. The project personnel, who were all to receive salaries from the project funds, would develop and produce the new materials, train the teachers, and supervise their use. In contrast with the Southeast Asian projects, the instructional supervisors were to be members of the project staff who visited schools and provided in-service training to teachers, not those who actually managed the project classrooms. The teachers, however, would be outside the project, and receive no special compensation for their cooperation.

Starting up

At a relatively early stage it was decided to locate the project near Gbarnga, Liberia's second largest city. Unlike Monrovia, Gbarnga is truly in the middle of rural Liberia yet at the same time at the crossroads of the major roads linking the various regions. There had been some early consideration of locating the project office on the campus of well known Cuttington University, near Gbarnga. Indeed, Dr Yekesen, then dean and currently president of Cuttington, was for this reason, invited to accompany the Liberian mission to Southeast Asia. However, USAID subsequently insisted that a separate project headquarters be established outside the campus. Janice Vani, one of the senior faculty of Cuttington, was seconded to assume responsibility as project director.

The project documents were not signed until early 1979, and it was several months later that the technical staff arrived. In March 1979, a teacher-training workshop on programed instruction was carried out in Gbarnga. The government of Liberia selected 35 participants for the course on the understanding that the most promising among these would join the project. The IIR staff who taught the course expressed their reservations about the selection procedures for the participants. While IIR felt the pool of candidates was inadequate, it cooperated with the project director in selecting 13 for further training.

In April, the 13 trainees traveled to Bloomington, Indiana, for a 3-month course in programed instructional design organized by Dr Sivasailam Thiagarajan, a senior researcher of IIR. Douglas Ellson, who had been one of the first members of INNOTECH, helped Dr Thiagarajan and others conduct the course.

From the start, the IEL project determined to maintain a high professional standard in module writing and printing. The technical staff included Dr Thiagarajan as well as two experts from the original Naga, Philippines IMPACT project. A careful process was established for writing and reviewing modules before the initial printing, experimenting with them in the laboratory school, revising, and trying them out a second time in the experimental schools. The full cycle for the development of a module was expected to be 2 years; thus the project planned to begin work in the experimental schools by 1981.

With the technical staff and local staff in place, from mid-1979 attention turned to the development of materials. At this point it was discovered that the newly revised Liberian national curriculum lacked the detail required for writing modules. To fill this gap, the project staff had to spend several months developing their own learning continuum for each of the subjects on the official curriculum. Philippine and other foreign models were reviewed as part of this process.

A plan was established for the preparation of 536 instructional modules: 41 each for grades 1 and 2 for programed teaching, 81 in grade 3 for transition, and 125 each in grades 4–6 for programed learning. For the lower grades a class period was divided into three parts for direct instruction, review, and practice. An impressive *Handbook for Instructional Management* was developed that included emphasis on positive reinforcement in the classroom and original classroom management procedures such as the use of hand signals and teaching aids.

As another manifestation of the concern for professional quality materials, expensive word processors were imported for typing the modules and a massive photocopier for their printing. It was also expected that this high technology would

relieve the project of many of the management headaches, associated with large typist pools and hand-cranked mimeograph machines, characteristics of the Southeast Asian projects. For the first months, the expensive machinery seemed justified but, from the summer of 1980, Gbarnga suffered a severe drought which dried up the nation's largest river and suspended hydroelectric power. Thereafter, electricity from a backup system was supplied intermittently to the project office creating havoc with typing and printing of the materials. This intermittent supply apparently was responsible for wiping out large portions of files in the word processing system. Later the project acquired different equipment and a simpler filing procedure. Expensive petrol generators were purchased to secure a steady supply of electricity, but these produced an irregular current that apparently even voltage regulators could not modulate. Mainly because of the electricity problem, the condition of the photocopy machine rapidly deteriorated. In 1982 much of the printing was transferred to Monrovia, 160 km from the project site.

On 12 April 1980, the Tolbert presidency was toppled in a coup led by Master Sergeant Samuel Doe. The orientation of the new government was so radically different that most of the government offices in Monrovia were effectively suspended. Several of the key backers of IEL, including Deputy Minister for Instruction Tolbert, were relieved of their offices and for several months it was not clear who in the ministry was in charge of the project.

This period of political limbo, combined with the aforementioned drought, tended to slow the progress at project headquarters. Writing and testing at the laboratory school continued, but the project was not ready by the spring of 1981 to begin a wider experiment. To accelerate the work pace, some modules were sent from Liberia to Indiana for review and editing by Dr Thiagarajan, former chief of party. However, later, the national steering committee expressed its objections to this procedure.

The steering committee asked why, if the project was intended to develop an indigenous capacity, was it necessary to send materials to Indiana? Aggravating the issue was an apparent independent action by USAID-Washington to fund the Indiana work without authorization from USAID-Liberia. These decisions, although apparently made with the intention of expediting the project during a period of political uncertainty, damaged its reputation in the eyes of certain members of the steering committee, notably those who, from the beginning, had preferred the strengthening of conventional teacher training and textbook production to the new IEL approach.

Partly to ameliorate these criticisms, USAID sponsored an external evaluation of the overall project by Robert Jacobs in November 1981 (Jacobs 1982) and an evaluation of the instructional materials by Grant V. Harrison and Robert M. Morgan in February 1982. Local critics were dismayed at the high marks extended the IEL project in these evaluations. For example, the latter report had only one negative evaluation (Harrison and Morgan 1982:41–42):

> The only important weakness of the project plan was its underestimation of the time and resources required for successful project completion. There was insufficient margin for error in the cost and time requirement estimates. The contractor should not be seriously faulted for this . . . The IEL project is considerably more complex and sophisticated than either the PAMONG or IMPACT project . . . It is difficult to calculate the cost to the project in time and efficiency, of situating in Gbarnga rather than the capital city . . . When one

examines the project's accomplishments for the past three years they seem quite respectable when viewed in light of all the unforeseen problems. Roughly estimated, the project will likely require at least one year beyond the present end-of-project date to completely fulfill the original project objectives.

These reports served as a catalyst for a serious local review of IEL. Dr Edward Tolle, the newly arrived educational officer for USAID, mobilized the long dormant steering committee and, over the next months, the committee carefully reviewed its thinking. Several members took a field trip to the project site to gain a first-hand impression. The committee was impressed with some of the project's activities but concerned with the high costs. Despite these reservations, it concluded that so much had already gone into the project that it would be a mistake to terminate it without allowing it a reasonable chance to demonstrate its potential. So, on one hand, the committee urged more funds and time for the project, while on the other hand, it decided to increase its vigilance over the project by requiring monthly reports and meetings. USAID subsequently funded the extension.

Into the schools and evaluation

Finally in 1982, 1 year behind schedule, the project had sufficient materials to carry out the larger experiment, although only for grades 1–3. While the experimental design that had been developed in 1980 called for experimentation in 10 schools to be compared with 10 status quo schools and 10 optimum control schools (supplied with a full complement of conventional textbooks), the project team decided to scale this back to five in each category. Some members of the steering committee viewed this decision as yet another example of project tardiness.

In February, the teachers at the five experimental schools received 2 weeks of training and from March the experiment began. To assist the teachers in their new roles, instructional supervisors, who had already tried out the materials at the laboratory school for a year, regularly visited the experimental schools. But many of the teachers in the experimental schools resented the efforts of the instructional supervisors, questioning both their professional credentials (based on only 1 year at the laboratory school) and their high salaries, three times the teachers' salaries. Under these conditions, the leadership of the principals within schools proved a more important determinant of project implementation than the efforts of the supervisors.

By early 1983, most of the modules prepared according to the initial plan were ready, and the first full implementation of IEL began. Based on the evaluation design, plans for a pretest and post-test of fourth graders in the experimental, status quo, and optimum control schools were put in place. The pretest results, released in the summer of 1983, did not look very good for the project, so all involved anxiously awaited the post-test results. At stake was the likelihood of an extension and/or the incorporation of IEL components in a World Bank primary education project that was scheduled to begin in 1984.

During 1983, yet another evaluation was carried out, this time focusing on project cost. The consultant in charge, Douglas Windham, demonstrated that the project as planned was not cost competitive with the optimum condition conventional schools (Windham 1983a, b, c, d, e). In response, the project staff reviewed their approach in mid-1983 and decided on a number of basic changes.

By combining practice and review, the three sections of the programed teaching modules were reduced to two. Recognizing that the number of real school days in a year had been grossly overestimated, it was decided to reduce the number of modules intended for each grade level as well as the number of pages in each module. Finally, recognizing that schools were smaller than originally anticipated and that alternate use patterns were more efficient, the number of copies of each module for each school was reduced (Thiagarajan 1983). These changes promised to cut instructional materials costs by over 50%.

By late 1983, the IEL project was within a few months of the end of its extension. Several members of the steering committee doubted its value, the early results on student achievement were not promising, and the cost analysis raised basic questions about its efficiency. The main argument in its favour was the need for Liberia to reap something from the already extensive investment in the project. Whatever the project's failings, it had developed indigenous instructional materials for grades 1–6; Liberia had not had these before. Finally, the small number of local officials and foreign consultants who actually took the trouble to visit the experimental schools came back with a favourable impression, for far more seemed to happen in those schools than in the nearby control schools.

Toward institutionalization

The Liberian experiment had begun on a more confident note than the first three experiences. At least on the international side, those involved in its planning were convinced that the IMPACT system had already proved viable and could easily be transferred to new settings. This confidence inspired their promise that educational costs could be decreased while educational achievement could be raised 50%. But the transfer was not as easy as they had expected.

In 1982, 3 years into the project, it was a year behind schedule. The revitalized steering committee proposed a 1 year extension, to give the new delivery system an opportunity to prove itself, while at the same time increasing the level of supervision. But over the next year, the project seemed to be getting into deeper trouble. Post-tests for the 1982 school year were not favourable to the IEL schools. The cost analysis showed the project to be more expensive than the conventional system under the optimum condition of full staffing and a full stock of textbooks. Those critical of the project emphasized other shortcomings, both imaginary and real, such as inattention to teacher training, unwillingness to expand to new sites, and inability to cope with field conditions. Partly due to the deteriorating reputation of the project, the plan to use funds from the fourth World Bank education project was abandoned in late 1983.

An example of the tone at that time is the following excerpt from a report in April 1983, by a USAID-Liberia education officer (USAID 1983):

> Cost overruns and problems with contractor–GOL [Government of Liberia] relationships have caused an increasing level of mission concern. In spite of frequent encouragement by the Mission the contractor still has problems with designing an instructional system that takes fully into account the realities of Liberian education — the actual number of instructional days, the length of the average school day, the school grade configurations and/or teacher grade(s) assignments within a school. Because of perceived social professional

misunderstandings between the principal investigator and GOL, it took Mission personnel over 2 months to obtain a country clearance for an upcoming TDY. Even more at issue is the growing complexity of the IEL system. Current efforts run at least partially counter to the project's original concept of a simple instructional pattern that could be economically produced and used effectively by underqualified teachers. Mission is working out these problems with the most recently arrived Chief-of-Party (No. 4).

From mid-1983, those associated with the project began devoting more energy to its reputation. A radical change was introduced in the plan for instructional materials cutting costs by over half, and making the project's delivery system cost competitive under the most conservative assumptions. Responding to the charge of unwillingness to take on new sites, the project team agreed to supply 30 new schools with IEL materials from 1984; to dramatize this effort, special wooden boxes were constructed to package the materials and in late 1983 several of the project's top staff took to the field to explain the IEL system to the new schools. The project officers and technical consultants increased the frequency of their trips to Monrovia to dispel negative rumours about the project.

Another turn of events was the recognition by the education staff of USAID-Liberia that the IEL project, despite all its faults, was popular in Washington and was being viewed as a potential example of what USAID would be promoting in its forthcoming 10-year African initiative. The USAID-Liberia officers began to speak of IEL in a more positive light. For example, as early as June 1983, a fi[illegible] memo from the USAID-Liberia office asserted that the contractor, despite allegations to the contrary, had been responsible with its accounts, and that the evaluation tests on academic achievement conducted by WAEC, while seemingly providing negative evidence, were inconclusive because they tested areas the IEL students had not studied.

Following up on these assertions, USAID contracted a new evaluation with SUNY-Albany. Edward Kelley, who took charge of this new effort, sought to replace the earlier WAEC tests with a new set of tests designed to measure the project's effectiveness in meeting its own instructional objectives. When this proved impossible, parallel evaluations were carried out by WAEC and Dr Kelley. According to early reports released by Dr Kelley to USAID and ministry staff, IEL schools outperformed the control schools (Kelley 1984a, b) (a full report is given in chapter 9). Moreover, as Kelley and others pointed out, enrollment and attendance at the IEL schools was much more impressive than at the control schools.

Sensing the changing climate, in early 1984, Deputy Minister of Education E.O. Gongar requested a memorandum from Dr Wes Snyder, resident adviser for the Fourth World Bank Education Project, which would sum up and juxtapose the new thinking on IEL vs. textbook strategies, particularly as they related to the World Bank's forthcoming Fifth Education Project (Snyder 1984a). On January 17, this memorandum was considered at a meeting attended by several top Ministry of Education officials and representatives of both USAID and the World Bank. The following are several of the points agreed on at this meeting (Snyder 1984b):

1. Collaboration between the USAID IEL project and the Fourth World Bank Education Project would be mutually beneficial and should begin immediately.

2. The Ministry of Education should become the focus of educational development. Accordingly, IEL should be institutionalized within the Ministry.

3. The notion of a rural commitment in these projects should be dropped in favour of a national perspective.

4. The acronym, IEL, should be dropped from project products. IEL materials should become the Ministry of Education programed materials.

The memorandum went on to indicate agreement on the need to coordinate the IEL and the Fourth World Bank Education projects within the Ministry of Education, and to develop a "long-term plan for instructional system options . . . with particular attention to the possible amalgamation of the IEL and conventional strategies" (Snyder 1984a).

The memorandum signaled a major breakthrough in thinking about the relation of IEL to the other parts of Liberia's educational system. The positive features of IEL were, in the future, certain to be recognized. With this encouragement, USAID began work immediately on a new multiyear grant equal in magnitude to the original IEL grant. IEL is well on its way toward institutionalization in the Liberian educational system, although exactly which aspects will be incorporated, and where, remains to be worked out by local decision-makers.

The Liberian case perhaps best illustrates the strong possibility of perception gaps between central and field offices, especially in times of rapid political and economic change. Fortunately, the Liberian project team was dedicated to developing a quality prototype, and a fair evaluation was finally carried out demonstrating the value of their efforts. The project is now poised to have a significant influence on educational practice both in Liberia and neighbouring countries.

8

Bangladesh's IMPACT

The latest member of the IMPACT family, Bangladesh, most closely conforms to the conditions described in the original rationale for the IMPACT concept. Assisted by the positive international regard for IMPACT and the accumulation of experience concerning its potential, Bangladesh has demonstrated remarkable speed in adapting the IMPACT concept to its educational environment. While the project is still quite young, it is second only to Indonesia in the number of schools it has reached. Most indications are that its rapid process of dissemination will continue.

Background

Structure of government

Bangladesh was part of Pakistan until 1971, when key politicians from Bangladesh concluded that their interests were not being represented by the national government. When the Pakistan government sent troops to discipline the Bangladeshis, the latter, on 25 March 1981, declared their independence. Following a bloody struggle of 8 months in which India intervened, Pakistan finally acknowledged the independence of Bangladesh. The new government sought to build a representative policy, but it faced great obstacles in promoting development. Ultimately, it was overthrown in a military coup and, while there have been two subsequent upheavals, military rulers continue in office to the present. IMPACT was introduced during the period of military governance and has not been seriously disrupted by the changes in political leadership.

Administration and organization of education

Before independence, the colonial government had sponsored a small western-oriented system for the elite and a system in the vernacular for others. The elite system prepared its students either for advanced education in England or at Dhaka University, which at one time was called "the Oxford of the East." The institution maintained a high standard for some time after independence, but gradually the quality of its staff declined. Especially when Bangladesh asserted its independence, large numbers of the West Pakistani staff departed, speeding the institution's decline. Thus, in contrast with other parts of the Indian subcontinent, the higher education system in Bangladesh is relatively meagre and has difficulty in meeting the national need for teachers.

While the remnants of the colonial system gradually weakened, the vernacular system using Bengali as the language of instruction expanded. During the Pakistan period, these schools taught English and Urdu as second languages so they could provide students with the minimal linguistic preparation necessary for participating in the national secondary and tertiary systems.

The severance from foreign models has enabled Bangladesh to develop its own educational structure. The first level is a 5-year primary school followed by two successive levels of secondary education, and finally university level. All levels of the system have shifted to Bengali as the language of instruction, with English included as a second language only at the secondary and tertiary levels.

Until 1974, the schools featuring a western-style curriculum were all self-governing. Following formalization of the new nation, the central government declared its intention to manage the schools. However, the government was sorely lacking in the resources required for this. Bangladesh is one of the poorest countries in the world, and the population is mainly engaged in agriculture. The first decade of independence was very difficult, and the government had only a small budget, a large part of which was devoted to meeting basic needs for food and health. In 1980, education received only about 15% of the national budget and a meagre 1.2% of GNP. Over the past several years donors have shown increasing interest in education. Unesco completed an informative sector study in 1979, and since then the World Bank has approved several large loans to improve the quality of education, both at the primary and secondary vocational levels. The IMPACT program was introduced as an appendage to one of these loans.

Apart from the public system, there is a religious system of *madrasahs* that teach reading, practical skills, and, most important, a correct understanding of Islam. The *madrasahs* are more regularly attended by young girls whereas boys prefer the public system.

Curriculum

The government guidelines on curriculum are still not firm, but following the nationalization of primary schools, the government began to specify the types of texts recommended for schools. In 1980 it took the further step of providing free texts to all schools. Because of its commitment to supplying these texts, the government is only interested in innovations that make use of the official texts. Thus, the Bangladesh IMPACT experiment stressed adjunct modules to supplement textbooks rather than the modules alone.

Personnel

Of the six countries considered in this study, the student–teacher ratio in Bangladesh is among the highest at 48:1, and teachers receive the lowest salary, about USD 25 a month. While for Bangladesh this is not a small sum, most teachers pursue other work to supplement their salary. Until 1974, teachers at the primary level were neither government employees nor subject to any regulations. Under the first set of official regulations, they were expected to have only 5 years of education beyond the primary level: even so, many were deficient. Since then, in-service training courses have been introduced, so there has been some improvement. A new generation of teachers should soon be coming out of the much expanded system for teacher training.

The experimental stage

Preparation

Of the experiments under consideration, the Bangladesh story is the most recent and in most respects the simplest. During 1979, Unesco was asked to study the problems of primary education. The World Bank soon thereafter conducted a feasibility study of assistance for primary education, and this led to discussions with the government of Bangladesh. The Bank proposed a group of related activities intended to increase access to primary education at that time estimated at less than 50% (with girls especially neglected), to reduce wastage (estimated at 75% of all entrants), to improve the quality of classroom education and school supervision, and to search for ways to reduce costs (by increasing the scale of school units and the size of classes).

The original thinking was to support the conventional system through teacher training, improving and distributing teaching materials, and building new schools; a figure in the range of USD 40 million was being discussed. The World Bank's vice-president for South Asia, in one of his reviews of the discussions, suggested the inclusion of some experimental efforts to search for new ways to deliver education, specifically, an approach such as IMPACT. This recommendation was approved, and somewhat less than 5% of the overall budget of the primary education loan was set aside for experimental work.

The original project document was framed in very general language speaking of an experiment over 5 years that would develop a new delivery system to be introduced into 18 schools. The schools were expected to use the existing curriculum and textbooks, augmenting these with teaching guides, modules, and whatever other inputs the researchers concluded would be necessary.

The Institute of International Research again was successful in the project competition. In the Bangladesh submission, rather than stating explicit quantifiable goals, the project's purpose was to be "to provide effective experiences to primary school students (grades 1–5) at a substantial reduction in costs" (IIR 1982). The components of the proposed delivery system were described as follows:

> Learning in the upper grades (grades 4–5) is primarily in peer groups of 5 students with children taking turns as group leaders. In the lower two grades

(1–2), learning is in small groups of 8 to 10 students under the direction of older students called programed teachers, who are trained to follow specific procedures for each instructional sequence indicated in learning materials called adjunct modules. These modules are adjunct to the textbooks. Grade 3 students are in transition learning groups under the guidance of an older student. Students in grades 1, 2, and those in the early part of the year in grade 3 are organized into programed teaching (PT) groups and the students in the later part of the year in grade 3 and in grades 4–5, into peer groups (PG). Students numbering up to 150 for the PT groups and PG students comprise a family under the guidance of one professional teacher called Instructional Supervisor (IS). The IS is assisted by the Instructional Aide (IA) who performs the non-professional activities of the teacher (IS).

The team to develop this approach consisted of Orlando Claveria as resident chief of party, Winarno Surachmad as resident curriculum specialist, and Daryl Nichols, vice-president of IIR as consultant. On the Bangladesh side, Babar Ali Sakar was IMPACT deputy director.

There were a number of significant ambiguities in the initial agreements. For example, while the project obviously required local personnel to write and edit modules in Bengali, no funds were specified for this staff in the contract to IIR; the contractor assumed that the government of Bangladesh would provide these people, but that assumption was not shared. Also, while the experiment was expected to take 5 years, the IIR contract was only for the remaining 2 years of the World Bank loan. Finally, the lines of authority between the experiment and both the Ministry of Education and the World Bank's Primary Education Project staff were not clear.

Starting up

One of the first tasks faced by the project was to work out these ambiguities through the development of an implementation plan during April and May 1981. The outcome of these discussions, which apparently were tense, was to reallocate funds within the contract to pay the salaries of module writers. The plan, which was approved by the government of Bangladesh, the World Bank, and IIR, indicated that the experiment would take place over 5 years.

In mid-1981, the Bangladesh official selected as deputy director and two others on the local staff traveled to Southeast Asia to visit the projects there. Meanwhile, the foreign technical staff began working with prospective module writers in planning the details of the innovation and analyzing the local curriculum as a basis for organizing their work. In early August, a party including the module writers and several prospective teachers began a 2-month tour of the Southeast Asia sites to gain familiarity with the existing projects.

On their return, attention shifted to the completion of enough modules to begin the experiment in April 1982. Several developments slowed this process. There were no prescribed texts for social science, so the adjunct modules had to be more substantial than expected. For all subjects, the process was slowed by the need to translate and translate back between the local language, Bengali, and the language of the technical staff, English. For these reasons, only a fraction of the required materials was ready by April 1982.

During the second year of module writing, new problems arose. Several staff members who were now skilled in module writing reached the point in their career at which they were eligible for promotion from teacher to principal. With the promotion, they were assigned by the National Personnel Office to new duties; fortunately, the project was able to secure a special intervention to enable their continuation with the project until the module writing was further along. Midway through the module writing, new texts began to be printed, using funds from the World Bank loan. While the new texts were a blessing to the schools, substantial modification of the adjunct modules, written to supplement the old texts, was now necessary.

Although the implementation plan had indicated that a field experiment would begin in five rural schools by April 1982, preparation dragged. Finally, it was decided to limit experimentation in 1982 to a laboratory school in the Dhaka area, with the main focus on evaluating the quality of materials; entry to the five schools was postponed until 1983.

This postponement of the full field experiment can be attributed to a number of factors: the time devoted to clarifying ambiguities in the original contract, the complexity of obtaining commitments from the government of Bangladesh, and the scale of the work involved in developing adjunct modules for five grade levels. On the IIR side, there was concern that the local members of the project were making unreasonable demands on project funds. On the local scene, there was a tendency to place blame on management from a distance. The project director was resident in the United States and could not always provide a timely response when decisions were required. Moreover, project funds were often released behind schedule, and this was attributed to the fact that they were being administered from IIR's American office.

True or not, these allegations led to a serious reconsideration of the mode of project management. The outcome was the withdrawal of IIR from the project in mid-1983. Dr Claveria, who had been the project advisor and chief of party, was hired directly by the government of Bangladesh to continue as resident advisor with primary responsibility for the project's management. In this way, costs involved in management from a distance were reduced.

Into the schools

From April 1982, the new materials were selectively introduced in a laboratory school in Dhaka not far from the project office. Feedback from this exposure led to significant revision of the modules and, by the spring of 1983, a sufficient number were available at all grade levels to begin field experiments. The five schools selected for the experiment were, like most rural schools in Bangladesh, small in size. They typically employed three or four teachers to teach 200 students. The lower grades were large, tapering off to smaller classes at the upper grades as children dropped out. The teachers usually lived in the local communities and often farmed in their spare time. Preliminary ties had been established with the schools in 1981 in anticipation of the fieldwork to begin in 1982, and three of the teachers at these schools had traveled to Southeast Asia during the 1981 tour. Two patterns were worked out for the schools. In the mainstream model, the school operated in two shifts. During the morning shift, the emphasis was on first to third grade with selected older students assisting as programed teachers. In the afternoon shift, all of the older students studied their texts in a peer group. In the

alternative model, all children came in the morning and the older children, when they had programed teaching responsibilities, simply put their studies aside. Volunteers from the community provided special tutoring, especially for the older students.

During the experimental phase, the schools decided to create families of approximately 100 students each. Given their starting point with 200 students and four teachers, this meant two families with two teachers each. More or less arbitrarily, one teacher was designated as instructional supervisor and the other as aide.

Evaluation and initial dissemination

The Bangladesh project is relatively young, and thus far, although the project documents speak of a formal evaluation, little evaluation has been done. In early 1985, the Unesco advisor, Magnus Hakansson, drew up plans for an external evaluation to be carried out by a local institution.

Despite the lack of a formal evaluation, various parties have developed a favourable impression of IMPACT. Local communities where IMPACT has been introduced seem to appreciate the new attention they receive and look forward with anticipation to new school buildings financed by the World Bank that have been promised by project officials. From the perspective of government officials and foreign donors, peer tutoring and the associated prospect of increasing student–teacher ratios seem to get the highest marks; the adjunct modules are also favourably regarded. On the other hand, skepticism is evident concerning the project's intention to introduce a fully modular system, because of the great number of modules required and the difficulties that might be encountered if curriculum changes are introduced.

In Dhaka, government officials continually pressed for results, recognizing that the project was being funded on a loan rather than grant basis and that it should yield a return on the investment. Advancing the original schedule, in 1984 officials authorized the introduction of IMPACT into 18 schools in the Tangail district, 100 km north of Dhaka. By early 1985, some officials in the government of Bangladesh were advocating expansion to as many as 500 schools, and discussions had begun along these lines both with the World Bank, in connection with the second phase of its primary education loan, and with the Swedish International Development Authority. While the actual scale of short-run project expansion will certainly be less than 500 schools, there is every reason to expect considerable dissemination over the coming years.

In no country has IMPACT made such rapid progress as in Bangladesh. The educational environment of Bangladesh includes a rapidly growing population, a shortage of trained teachers, and severe constraints on government funds. These features are similar to ones identified in the original rationale for IMPACT. The felt need for a new educational approach, the effective transfer of cumulative experience, the favourable attitude to the project on the part of international donors, and the strong support of the project by key local officials all have figured in this progress. There is obvious value in monitoring future developments of the Bangladesh project.

Part III
Summing Up

9

The Role of Research

Research has figured prominently in the IMPACT story, though not always as intended or expected. In this chapter, I review some of the research that was conducted and identify some of the relevant complexities surrounding this research. Also, I indicate other topics for research that could have been attempted, probably at reduced cost and possibly yielding more positive findings. In reviewing the research, I begin with three questions:

(1) Is the research good according to international standards?

(2) Did the research make any difference?

(3) Did the process of research lead to a transfer of skills?

Before answering these questions, it is necessary to confront the fundamental ambiguity running through the IMPACT projects in terms of what constitutes research: by research do we mean the entire developmental effort or do we mean specific investigations of scientific hypotheses using a codified methodology? The tendency for these two meanings to become interwoven is a significant feature of the review of IMPACT projects.

It is useful to appreciate that the notion of what constitutes good educational research is not fixed. When IMPACT began, the intellectual war between quantitative and qualitative researchers was being waged in the corridors of university social science departments. Only gradually were the differences resolved and the new understanding diffused to educational research centres. Similarly, opinions of donor agencies on the importance of research and what constitutes good research were also shifting. The IMPACT story spans a 10-year period of dynamic change in the research world. As far as possible, I try to take note of this shifting context as I consider the role of research.

The mixed metaphor in IMPACT research

Part of the confusion about research goals in the IMPACT projects seems to stem from the language used by INNOTECH to describe what was being attempted. At first, the aim was to develop a mass delivery system that might eventually find application throughout Southeast Asia (INNOTECH 1973a). However, by the time the project received IDRC funding, it had been relabeled a research project to experiment with a single innovative concept in two different settings (INNOTECH 1973b). To a researcher, "developing a system" and "experimenting with a concept" conjure up strikingly different images.

For the developmentalist, research is similar to what a craftsman does as he builds a customized auto. Various designs are sketched, then one is chosen; several engines are tried before the right one is selected, and so on. Developmental research is a creative step-by-step process oriented toward developing a product. Largely uncodified criteria of feel, taste, and experience guide the researcher's decisions. In contrast, the experimental approach generally begins with a complete product, then proceeds to set up an experiment where the product is rigorously compared with similar products to see which one works best.

In the IMPACT story, these two research metaphors were mixed. The original INNOTECH team, while saying it was conducting an experiment, was in fact involved in developing a delivery system; they evidenced little concern for what, in research circles, is understood as an experiment. The original technical proposal outlined eight research goals, which included: developing instructional materials; exploring the use of community members or older students with no professional training to teach young children by programed teaching; and identifying appropriate community resources and how to use them (Flores 1981: 56–57). Nowhere in the original documents was there a suggestion of comparing the performance of the project schools with a group of conventional schools.

It was after the project had been in operation for over a year that discussion began on ways to evaluate its success. The main initiative for this evaluation came from outside the project, from members of the international network who were beginning to worry that third world countries start many experiments but rarely make the effort to examine which ones work. As one expression of this shifting international mood, IDRC urged the directors of Indonesia's PAMONG and the Philippines' IMPACT to consider more quantitative procedures for project evaluation. Recognizing that these suggestions would require additional effort, IDRC offered additional support for the new research. IDRC recognized that the introduction of evaluative research midway through the developmental phase might not yield decisive results. However, even if the evaluation did not prove as decisive or fruitful as hoped, IDRC reasoned that it would result in the transfer of vital research skills and orientation that could benefit future projects.

Midway in the development phase of the original project, but long before a finished product was ready for evaluation, an experimental design comparing the unfinished innovative school with long-established conventional schools was set up and followed. This same design, repeated in subsequent projects, was destined to produce unsatisfactory results.

As one example, consider the USAID-funded experiment in Liberia, where IEL schools were compared with two groups of control schools, one without any

special intervention and a second optimum condition group in which new textbooks were supplied for the basic subjects. Over the course of the experiment, attendance and dropout rates at the schools in the two control groups remained constant; in contrast, attendance significantly increased at the five IEL schools, from a total of approximately 830 in 1980 to 1415 in 1983 (Kelley 1984a). We can speculate that the high attendance and retention rates at the IEL schools derive from a popular perception that something was happening in these schools and from a favourable student reaction to the positive pedagogy they emphasized; while in many Liberian schools, misbehaving and tardy children are whipped, at IEL schools punitive measures were curtailed and teachers were urged to limit their evaluations to positive reinforcement for correct responses.

The increased attendance at IEL schools, possibly reflecting their attractiveness, placed them at a disadvantage. While at the conventional schools low performers tended to drop out, IEL schools kept most of their original students and, moreover, attracted new students who entered at the middle grades. Thus, the academic performance of the relatively few presumably exceptional students who stayed in the conventional schools was compared with the performance of the much larger and more representative group at the IEL schools, some of whom had only been partially exposed to the IEL approach. The initial evaluations of the IEL experiment made no reference to these violations of the experimental design deriving from the developmental character of the project.

There is little evidence to suggest that those involved in the initial or later projects were concerned about mixing their research metaphors; rather they expressed satisfaction with the neat efficiency of collapsing the development and experimental stages into a single stage. It is only in the mid-80s that people associated with the projects have become conscious of the difficulties engendered by this confusion and have begun to think of ways to avoid them. Essentially, they propose one of three solutions: (1) insist on a longer research process with sufficient funds to carry out both developmental and experimental stages; (2) if the two stages must be collapsed, use a before–after design for the schools in the experiment to avoid comparing them with a control group, for there is unlikely to be a strictly comparable group; (3) in looking at the experimental schools, place less emphasis on academic achievement and more on other features, such as student attendance and school climate (Kelley 1984a).

In making the above observations, we do not mean to suggest that development and experiment are the only metaphors in the research world. Another metaphor that entered the IMPACT story from the late 70s was qualitative research, which came to mean anything from careful ethnographic work to brief peeks at selected classrooms. Also, researchers eventually realized that evaluation need not involve an experimental design.

Most of the individuals in charge of these projects had had little formal training in research methodology; while agreeable to introducing research into the projects, they had little understanding of what this might involve. Lacking the time for a systematic introduction to research, they learned as the projects developed and this learning was not always in the appropriate sequence. Gaps in the research skills of project personnel and hence the somewhat unsystematic manner in which research was often incorporated into the projects help to account for many of the shortcomings noted in the following pages.

The ambiguity between the developmental and experimental metaphors creates difficulty for a research review. Essentially, two different kinds of research were conducted, developmental and experimental/evaluative research, and each has distinctive standards for its assessment. Here, rather than focus on research that falls within one or the other of these two traditions, I look at each in turn.

Successes in developmental research

Curriculum development

In terms of curriculum development, the Malaysian and Liberian experiments deserve high marks. In chapter 6, I noted the full array of materials that the Malaysian experiment developed. Using this material, a teacher with a minimum of preparation could successfully fill virtually every classroom minute with interesting and attractive activities. The teaching guide tells the teacher what to prepare before class; how, in the first few minutes, to recall old material; and how, in the next 20–30 minutes, to present new material. For the remainder of the period, the teacher is able to lead slow learners through a special drill with attractive instructional aids while the other students work on self-instructional worksheets. The instructional kit also provides periodic tests.

The Malaysian team devoted considerable care to examining each subject, breaking it down into learning objectives, and developing an overall format to cover and reinforce these objectives. Outstanding teachers were selected to write the teaching guides, and a stern editor was assigned to appraise their work for clarity and substance; some materials were returned as many as three times for improvements. A talented team of artists was assigned the task of preparing lively instructional aids. Before any of the material went into final production, it was tried out in a laboratory school and reports were sent back to the original writers. Finally, high performance standards were set with the result that several of the less able writers returned to their teaching jobs after a stint with the project. In these ways, the project team was able to develop materials of high quality.

While the high standards of the project personnel are part of the story behind the quality, it is clear that the political situation in which the project became embroiled helped to elevate these standards. The project's visibility made everyone involved feel the importance of a total effort. The high standards are all the more remarkable when one recalls that project personnel received no special incentives above those for civil servants of their status.

The materials developed for Liberia were also of exceptional quality. In the words of one evaluation team: "the developmental processes utilized in the IEL project are sophisticated, intricate and complex. They represent the most advanced state-of-the-art technology for instructional development" (Harrison and Morgan 1982:41). The Liberian project faced a great challenge as the official curriculum consisted of no more than very broad guidelines, and there was no local expertise in textbook writing or publishing. To meet this challenge, many technical assistants were recruited including two writers from the Philippines and consecutive curriculum experts from the United States.

In terms of basic organization, the project office essentially borrowed the original IMPACT design, with a local project director in charge of various staff for

module writing, evaluation, production, and distribution. But at the school sites, the Liberian experiment established a new specification for the role of instructional supervisor. In the Philippines, this term was used to designate the actual individuals in charge of classrooms; in Liberia, regular teachers retained responsibility for classrooms while the instructional supervisors were expected to visit and supervise the classrooms. Tensions inevitably arose because the instructional supervisors, who were project officers receiving generous incentive pay, had only 1 year more IEL experience than the teachers they were supervising. Many teachers rejected the instructional supervisors' efforts, and to make good use of their time the supervisors devoted their attention instead to problems children were having with the project materials. A process was developed for the systematic feedback of their often extensive observations to writers. In addition, the project office often sent writers into the field to keep in touch with actual classroom conditions, and the technical assistants constantly urged high standards for written material. The positive climate created by these procedures resulted in materials of generally high quality.

It should be noted that in these two examples, quantitative techniques were not used to evaluate the quality of trial materials. In the original project designs, there was discussion about testing to determine the relative difficulty of trial materials as a basis for improvements. An evaluation officer was appointed to administer these tests. Yet once the experiments began, the project directors decided in favour of a qualitative approach to evaluating trial materials, presumably because the quantitative route seemed unwieldly.

School organization and classroom management

The Philippine and Indonesian experiments were more noteworthy for their innovations in school and classroom organization. In the Philippines, observers were impressed by the energy and devotion of the original project staff, ranging from the instructional aides through the project director. At each of the experimental schools, weekly staff meetings, called brain-storming sessions, were held to discuss common experiences. Out of these meetings evolved the idea of establishing the multigrade family as the basic educational unit. The family proved to be an effective means for organizing the peer-tutoring system and for conveying values of cooperation and respect for family that are so central to Philippine rural life.

In the Indonesian experiment, one is especially impressed with several of the innovations affecting classroom management. In the lower grades in all the experiments, students tended to proceed at more or less the same pace under the management of their teacher. However, in the upper grades, as the students turned to self-instructional modules, two problems emerged: boredom and differential pace. A small minority of students apparently enjoyed working on their own with modules and moved ahead quickly, but most students poked along. If the students had been allowed to proceed at their own pace, some would never have graduated while others might have completed their sixth grade education in less than 5 years. Whereas some educational systems might have tolerated these problems, the Indonesian team decided to work on them. The usual mode for their discussions was a several-day workshop at some popular retreat attended by teachers, officials, and project officers.

The first innovation developed was peer-group learning, wherein three to six students at the same grade level would form a group to study modules together.

After some experimentation with this approach, modules were revised to assign distinct roles to a peer-group leader and the other members, and a procedure was developed so that the position of group leader could rotate among the members. While these innovations alleviated boredom, differential pacing remained a problem.

As the Indonesian project team became more familiar with the principles of mastery of learning, they began to introduce pre- and post-tests for each module and to insist that no group could move on to a new module until all members had achieved 90% on the post-test. Post-tests were administered by the group leader and checked by members exchanging papers. Each student was expected to record his performance on a master sheet and, if the mark was lower than 90, to review for retesting. Once students realized they were responsible for the progress of all their group members, fast learners manifested a more helpful attitude toward those in difficulty, and the overall cooperative spirit in classrooms was considerably enhanced. Also, because students corrected their tests and recorded the results, teachers were relieved of considerable clerical work.

Experimental/evaluative research topics

To open discussion of the second research tradition, it is useful to list the types of research that can be carried out over the course of an educational project (see Table 5). At first, baseline surveys and reviews of available educational statistics are attempted to gain some sense of the terrain and to select research sites. Such data are also useful for selecting samples and for reference after a project is completed to see if anything has changed. Also, at an early stage, it is important to plan or estimate what will be required to realize project goals in terms of people and financial resources. In a project concerned with reducing educational costs, this research can help to identify the particular combinations of inputs that will lead to this objective. Once the project moves into the classroom, it is useful to carry out various process studies: What is going on in the classroom? How often are students attending? What are the repetition and dropout rates? If new material is being developed, curriculum tests are useful to determine its relevance and difficulty level. After a project has reached a certain level of maturity, it is appropriate to see whether its interventions are making any short-run differences in cognitive achievement, attitudes, or simply satisfaction with education. Also, if this has not already been considered, it is useful to determine the cost of the intervention. Finally, on the assumption that it may be difficult to measure immediate results, it is possible to look at long-term effects.

Studies of each type carried out for each of the national projects are listed in Table 5. The table has few surprises. For example, Indonesia and the Philippines would appear to be winners in terms of sheer quantity of research; they also have been involved with IMPACT the longest. Somewhat disappointing is the virtual absence of completed research in Malaysia, although the project has been underway for several years and the sponsoring university has many qualified researchers; the project was slow to involve researchers and then faced the task of altering its treatment so as to conform with the new KBSR curriculum.

The studies noted in the table vary widely in terms of ease of execution and utility. In general, the studies nearest the top of Table 5 are the easiest and have the

Table 5. Research associated with the projects.

Area of research	Philippines	Indonesia	Malaysia	Liberia	Jamaica
Baseline survey			Raman 1980		
Classroom interaction		Sulistyano 1983 Mudjiman 1981	Loganathan 1983		Brown 1983 Wood 1983
Indicators of satisfaction, e.g., satisfaction surveys, attendance studies	INNOTECH 1981a, b		InSPIRE 1983b		
Curriculum evaluation				Harrison and Morgan 1982	
Cognitive outcome	INNOTECH 1978	Saleh 1981 Nielsen 1982b Sukardjo 1983 Hartono 1983	InSPIRE 1983a, c	Galda 1982, 1983 Kelley 1984b	Mitchelmore 1982a, b; 1983a, b
Effective outcome		Pulganadi 1983			
Cost analysis	McMaster 1979 Tullao et al. 1983	Boedioni et al. 1981 Slametto 1983 Suparman and Klees 1984		Windham 1983 a–e Thiagarajan 1983	
Tracer studies	Mante 1981				
General evaluations	Wooten et al 1981	Setiadi and Seymour 1982 Thiessen 1985		Jacobs 1982	

greatest value for improving the project. Moreover, they assemble useful data and provide a helpful reference point for evaluating the results of later studies (those listed toward the bottom of the table). I turn now to review some of these studies.

Highlights of experimental/evaluative research

Classroom interaction

In most of these experiments, it was assumed that the classroom process would somehow be richer, yet in very few cases were classrooms systematically examined. In Malaysia, some quantitative techniques were used for this purpose but the final report is not complete. Haris Mudjiman carried out a comparison of the interaction process in PAMONG and non-PAMONG classes, attempting to relate classroom differences to differences in cognitive outcomes. The rationale for this exercise was impressive, but the observation period was only 3 days and the results were inconclusive (Mudjiman 1981). Qualitative techniques were used in Indonesia and Jamaica. Of these, the Jamaican report, which focuses on the role of the tutor, is certainly the most interesting. It places the investigation in the more general cross-national tradition of research on tutors, and includes a rich harvest of quotations from experimental participants and keen observations by the field-workers (Wood 1983).

Cognitive outcome

All IMPACT projects sought to determine how the cognitive achievement of students in experimental schools compared with that of children in conventional schools. The Philippine results were the first reported and, among those professionals who have followed the IMPACT story, it is widely understood that the Philippine results show the superiority of the experimental schools. Indeed in the written text of *An Evaluative Study of Project IMPACT* (INNOTECH 1978), the positive findings were consistently emphasized.

A more careful reading of the clearly presented data in the report leads to the question of whether the two groups of schools were similar in all respects except the experimental condition — the requirement in experimental comparisons. The educational and socioeconomic levels of the children attending IMPACT schools are significantly higher than those of children attending the control schools: 38% of the parents of non-IMPACT children had not finished elementary school compared with 34.6% of the IMPACT parents; the average monthly income of non-IMPACT families was less than 80% of that for IMPACT families (INNOTECH 1978:24–28). In addition, IMPACT teachers had more experience and were somewhat better educated. While these differences are not large, they consistently favoured the IMPACT schools and were especially notable for grade 4 students. Also, as noted in chapter 3, the IMPACT children received a special course in reading during the summer break before entering fourth grade; this course was not offered to children in the control schools.

When one turns to comparisons of cognitive achievement, there is a relatively clear pattern of cognitive superiority for grade 4 IMPACT students but not for the advanced grades. For all grades, while IMPACT was consistently superior only in *wika* (language) and *pagbasa* (reading), on further inspection it turned out that a

significantly greater proportion of IMPACT students reported that they spoke Pilipino in their home.

It appears that few who read the IMPACT report noticed these details, for while the report should have led to questioning of IMPACT's superiority, most outsiders assumed it clearly showed the superiority of the IMPACT approach. Thus a misleading climate of positive expectation was generated which was to haunt the subsequent projects, since none was able to generate convincing proof of its superiority over conventional education.

The several Indonesian studies of cognitive outcome were inconclusive (Thiessen 1985:22–31). With hindsight it is apparent that the tests used in many of these studies, being based on the conventional curriculum, did not adequately test the material taught in the PAMONG schools. Also, teachers in both PAMONG and non-PAMONG schools were known to manipulate scores.

Most of the subsequent research simply replicated the classical experimental design. Only in the later experiments have the researchers, almost out of desperation, begun to look into their data to consider why the schools in which they so firmly believe do not do better on these tests. In Jamaica, for example, Mitchelmore (1983b) sought to control such factors as the relative quality of implementation of the experimental condition and the extent of absenteeism among students in the experimental schools. In Liberia, as we noted earlier, the experimental schools may have been at a disadvantage in these comparisons simply because they were attractive to students and so retained both the solid students and the weak ones whereas conventional schools tended to scare the weak students away.

An additional concern in Liberia was the appropriateness of the tests designed by the West African Examinations Council (WAEC), an external body largely unfamiliar with the practice of education in rural Liberia. Thiagarajan (1983) examined the items used in the WAEC tests and found that many were for material not covered in the experimental schools. Thus for the summative evaluation, the project team designed its own tests to be administered parallel to the WAEC tests. Whereas the WAEC tests showed the IEL pupils to be superior in only 1 of 16 comparisons, the tests developed by the project team, with reference to the instructional objectives of the IEL materials, indicated the IEL pupils were superior in 10 out of 10 comparisons (Kelley 1984b:25). This contrast naturally raises questions about which test is reliable. More generally, it points to the complexities in designing tests that are fair to both conventional and programed instruction strategies.

The upshot of these reflections is an emerging set of arguments to the effect that it was inappropriate to employ the classical experimental design. Rather, the focus should have been on gain scores and other changes for groups of individuals affected by different phases of the experimental treatment alone. This position is best formulated by the researchers involved in the Liberia project. Edward Kelley, who was invited in 1983 to carry out the summative evaluation for the project, argued against the traditional "horse-race" evaluation design (Kelley 1984a). He pointed out that the traditional design depends on rigorous assumptions: (1) before the experiment there is a viable control group that is comparable in all respects to the experimental group and (2) the only change affecting these two groups is the new treatment for the experimental group. Kelley forcefully argued that the three groups identified as status quo, optimum control, and experimental

at the beginning of the IEL project were not identical and that each went through a variety of changes over the course of the project that violated the second assumption. He notes that leaders in the field of evaluation research, who once insisted on experimental designs with control groups, have now modified their positions. Moreover, the horse-race approach does not look into what happens in classrooms and, hence, fails to indicate what is behind the differential performance of the various groups. It also ignores questions of student and teacher satisfaction. Finally, it is an expensive design. The Liberian project apparently had adopted the design to conform to the requirements of the contractor, USAID. Kelley's arguments convinced USAID that current conventions of evaluative research and actual project conditions required a new design that would focus only on the project schools.

Effective outcome

In the first experiments, the main focus was on a new cost-effective technology for developing cognitive skills. Yet as early as 1977, the Indonesian experimenters were emphasizing the effective gains of leadership, initiative, self-confidence, and cooperation. Similar themes were echoed by the Philippine team, and to some degree also by those in Jamaica and Bangladesh. Only Indonesia has carried out relevant research, presumably because of the considerable difficulty in developing reliable instruments for measuring effective outcomes. While the Indonesian research reported significant effective outcomes with respect to study habits, self-confidence, initiative, and cooperation with others (Pulganadi 1983:7), the analysis was flawed. For example, rather than comparing means of students in all experimental vs. all control schools, the research compared the means of paired schools. For any given outcome, there were significant differences for some of the pairs and no differences for others. Thus it was difficult to draw confident conclusions about the effects of PAMONG on the attitudes of students.

Cost analysis

While four of the studies began with the explicit goal of developing a delivery system that would reduce the per unit cost of primary education, only three formally looked at the cost side. In chapter 3, we reported the results for the Philippine study (Tullao et al. 1983), which was essentially hypothetical. The savings it indicated were implicit rather than explicit. That is, the savings would be possible if the government made appropriate changes in its procedures for financing schools, such that a school that hired fewer teachers or did not want the normal supply of official textbooks could reallocate the money saved to acquire other inputs. But as we have noted, the reallocations did not take place.

The second cost study was carried out by Douglas Windham (1983a, b, c, d, e) for the Liberian project. In a series of five papers, Windham observed that the Liberian project had begun with the assumption that it would be providing materials to relatively large rural primary schools of several hundred students, whereas in fact most of the schools receiving its materials had at most 200 students. Windham pointed out that the economies of scale envisaged in the original project plan could not be realized in these smaller schools and, unless various changes were introduced, the unit costs for project schools might be

higher than for conventional schools. The report outlines alternative approaches, including a reduction in the number of modules and a decrease in the number of copies sent to schools, that, given prevailing costs, might make unit costs at the experimental schools less than at conventional schools. This extensive and thoughtful analysis had a significant effect on the development of the Liberian experiment. A central question is why work of this kind was not begun earlier in the project to give the curriculum developers reasonable guidelines for planning their materials.

In Indonesia, the cost study (Suparman and Klees 1984) was not completed until the very end, after the project had radically reduced the volume of its materials. With this change, the materials used in project schools cost about USD 3.50 per student annually compared with USD 2.80 for conventional schools; the higher materials costs were offset by lower staff costs with the result that project schools (without learning posts) were about 2% less expensive than conventional schools. In schools with learning posts, the saving was 12%. Unfortunately, these results came so late in the study that they had little influence on decision-making.

Tracer studies

On many occasions, principals said that their students had learned to read and study on their own through using the IMPACT system and, hence, should be doing better at the next level. This observation was sometimes used to explain the lack of difference in cognitive scores for graduates of IMPACT and control schools: not now, but later. While the same people would cite particular examples of students who had performed well in high school, in only one instance had systematic research been conducted (Mante 1981). This study, which followed Philippine IMPACT students for 2 years after their graduation, indicated that IMPACT graduates did as well as non-IMPACT graduates in all subjects. IMPACT graduates were also found to have a stronger self-concept.

One peculiarity of this and other Philippine reports is the practice of presenting academic achievement data by type of school (IMPACT versus control) and by "mental ability." The documents do not explain the rationale for this practice, but it apparently is intended to disprove the popular belief that IMPACT schools are favourable only to fast, i.e., high mental ability, students. The reports rely on cross-tabulations to realize controls, and this limits the number of variables that can be simultaneously controlled. Thus, whereas mental ability is controlled, socioeconomic status, family income, and other relevant variables are left out. An approach relying on analysis of variance or other multivariate statistics might have been more convincing.

Still, it is pleasing to have one reasonably detailed tracer study of graduates from the experimental system. Hopefully, other studies will be forthcoming, for research of this kind can provide the most convincing evidence.

Needed research

While a number of studies were carried out in connection with the IMPACT projects, other topics might have been usefully taken up. First, at all the experimental sites visited, there appears to be a particularly joyful atmosphere, more so

than at conventional schools, perhaps because the schools allow more opportunities for participation and expression. On the assumption that children like activity, it is reasonable that attendance would be higher at these schools. Principals and project officers generally felt this was the case, yet no records were kept during the normal course of the experiments. Interestingly, it was only at the time of the field visit in connection with this report that the Liberian project began to pay attention to attendance rates. The data subsequently assembled by the project staff and external evaluators figured in the decision for a major expansion of the project.

Second, there is the issue of the equity of outcomes in project and conventional schools. Many of the experiments were influenced by the philosophy of mastery learning, which holds that all children can learn given adequate time and appropriate conditions. In the Indonesian case, systematic effort was devoted to structuring a classroom context that conformed to these conditions. Were the cognitive gains more uniform than in conventional schools? In contrast, in the Philippines, upper-level children were allowed to proceed at different paces and, in Malaysia, there was formal streaming. Did these latter procedures accelerate disparities in cognitive gains? These questions, it should be noted, are not academic; in the Philippines, as the Naga IMPACT schools developed an elitist reputation, many parents withdrew their children.

Another concern in the realm of cognitive achievement was the relative effectiveness of programed teaching and programed learning. The first projects began with a formula of programed teaching for grades 1 to 3 and programed learning for the upper grades. But, especially in the Philippines, parents questioned the merits of programed learning and, in Malaysia, programed learning was never developed. It would have been desirable for some research to address the relative merits of these two instructional designs for children of the same grade level.

Distinct from cognitive outcome are the effects differential achievement of students had on their self-images. The Indonesian experiment, which was most concerned with equity in terms of cognitive outcome, might investigate the consequences of allowing only the better students to assume the role of programed teacher.

Another vital area for research is the acceptance of the innovation by teachers, students, and the community. In each of the countries, there was considerable variation in the quality of implementation of the new delivery system. The receptiveness of teachers and parents was a major factor behind this variation. Also, especially in Jamaica and the Philippines, some of the older children objected to their assignment to the role of tutor, either because they felt shy or because they worried that the time spent as tutor detracted from their own studies. These objections probably contributed to parental disaffection with the schools, but we have no research reports on these factors. As the projects move toward institutionalization, such information could be useful.

Use of research by the project

There are a number of ways that a project can use research: to improve materials, to monitor performance at different schools, to judge the best mix of materials for different kinds of students, to control costs, to advocate expansion to

new sites. The project teams were concerned with all of these objectives and made some effort to become familiar with new research techniques for furthering their objectives. Yet in many cases they finally abandoned special techniques for the more familiar approach of the craftsman. For example, while the analysis of achievement tests is a proven technique in curriculum analysis, none of the studies relied on this quantitative procedure, favouring instead a more qualitative approach.

It is useful to make a distinction between research for the purpose of project improvement and that for the purpose of project advocacy. In general, it was assumed that quantitative techniques were more useful for the latter. Thus, we find little evidence of quantitative techniques or data in the development process. Baseline surveys of school sites were reportedly carried out, but in most cases they were neither written up nor subsequently referred to. Enrollment and attendance figures for the schools were recorded on a daily basis, but never used as a simple monitor of an experiment.

In some cases, the avoidance of quantitative data in the development stage was clearly unfortunate. Most of the projects eschewed cost analysis as a planning device, and only turned to it in the final stages as a means for advocacy; in the Liberian case, this led to the embarrassing discovery that costs were excessive.

The major advocacy goal in all the projects was to show that their delivery system could teach rural children more effectively than the conventional one. To illustrate this, all of the projects settled on an experimental design comparing achievement scores in the project schools with achievement scores of children at the conventional schools. Yet, as we have already indicated, in most cases the experimental schools did no better in terms of these scores than the control schools. Because the experiments tended to focus on this single indicator of success, project personnel were in a poor position to advocate wider dissemination. If multiple goals had been identified from the outset and progress in reaching these goals continuously monitored, they would have been in a more favourable advocacy position.

Use of research by outsiders

In each of the six countries, the experiments attracted much attention, and outsiders representing diverse interests carried out independent evaluations. Typically, these efforts included visits to schools and reviews of the research reports.

In general, in the high-level national discussions about the future of the projects, quantitative information and its absence proved more important than qualitative information. How much cheaper were the experimental schools? Did children learn more? Did the schools have lower dropout rates? When neat, quantitative answers to these questions could not be provided, high-level policymakers tended to assume the answers were unfavourable. Qualitative information about the liveliness of the schools or the self-confidence evidenced by students were persuasive to foreign observers, but not to local officials.

Projects were not always well armed with the quantitative information sought by local high-level officials. In part, this resulted from developmental work consuming so much time that evaluative research could not command high priority. In

the Liberian, Jamaican, and Bangledeshi experiments, the position of research officer remained unfilled for a long period. Also, the project teams tended to favour complicated summative research that they could not complete on a timely basis. In Jamaica, the achievement results were not compiled until 8 months after the project had been terminated.

Project researchers evidenced a disturbing naivety in presenting their experiments to policymakers. They assumed their results would be accepted at face value, and did not anticipate many of the reasonable questions that might be asked. For example, when the Indonesian project advocates said their schools were no more expensive than conventional schools, the critics pointed out that the schools used nearly twice as much paper, a fact they had not included in their cost estimates. In the Philippines, while project advocates focused on the high average scores of students, critics argued that the schools favoured the better students so that many of the weaker students had dropped out. Later, the Philippine group published results cross-tabulating school performance in IMPACT and conventional schools with IQ. Even though the analysis was intended as an answer to the above criticism, the report did not indicate how it related to the criticism. In Malaysia, critics said that the InSPIRE materials made teachers into robots, yet the project lacked data to illustrate the high level of teacher satisfaction with the materials or studies of classroom interaction to support its contention that the InSPIRE approach allowed teachers to give more individual attention to students than did the conventional model.

Looking back to the original discussions surrounding these projects, it is clear that the project leaders had not anticipated the need to build a case for their system. Rather, they saw themselves carrying out an interesting experiment. They somehow assumed that the experiment would speak for itself. They were not attuned to the problem of advocacy and, in general, handled this rather poorly. Thus the success of projects in moving toward institutionalization was based more on political factors than scientific evidence.

In policy discussions, more attention should have been given to the fact that these projects were attempting to provide a delivery system in areas where the conventional system had proved inadequate — in the rural and backward areas of Malaysia, in the sparsely populated outer islands of Indonesia, and so on. The challenge of education in these peripheral areas was greater and hence any system designed for these areas should have been evaluated with special criteria: rather than assume it should cost less, assume that it might reasonably cost more given the logistics, the lack of student motivation, and the difficulties in recruiting able teachers. Only toward the very end of the IMPACT story were project members beginning to appreciate the appropriateness of this line of advocacy.

Skill development

A general concern in projects of this kind is to transfer skills to the societies where the experiment is taking place. For example, a major aim in Liberia was to achieve a Liberianization of the project. During field trips to the six countries, I asked officials, researchers, writers, and teachers how they had been changed by the projects. The Indonesian project, mainly because it was in operation so long and eventually reached so many schools, affected the most people.

Perhaps more important than numbers affected was the extent to which the project left behind an indigenous capacity to keep going once the external technical assistance came to an end. As I indicate in chapter 10, projects funded under a grant format, where they were based in an established local institution and administered by local people, tended to be more effective in this regard than those funded under a technical assistance arrangement.

In Liberia and Bangladesh, the contractors were so concerned about realizing contractual goals that they tended to do much of the work themselves. Local staff were given relatively less responsibility and hence many were not as informed about the structure of tasks or the rationale behind particular procedures as I expected. Also, in the Liberian case, most of the project-related evaluative research was contracted out to foreign consultants; while several of these external research efforts have made valuable contributions to the project, they have done little to advance the local capacity for research. In Liberia, there is now a demand for local control over project activities. In Bangladesh, no evaluative research has been carried out.

Of course, the grant format also has shortcomings. In Malaysia and Jamaica, IDRC's grants did not include funds for foreign technical assistance, primarily because the local leaders felt they could do it on their own and IDRC concurred in this judgement. In both cases, the projects started slowly and, in terms of the boldness of their innovations, were relatively unimpressive. In the Jamaican case, the project eventually closed with little to show for the effort. IDRC program officers visiting the project site pointed out certain inadequacies in project performance to the director, including the need to strengthen the research component. Indeed, IDRC officers went so far as to suggest hiring a foreign consultant, given the difficulty of recruiting local talent. However, the local project director did not act on this suggestion and it was contrary to IDRC philosophy to press the issue. Malaysia was able to accelerate from its slow start because of the drive and organizational skills of new staff, some from outside the host university, who were brought in midway by the university administration.

The Philippine and Indonesian cases represent the middle road — a grant format with a foreign consultant present to help in realizing loosely defined goals. Especially in the Indonesian case, where local officers insisted on asserting their authority, large numbers of local people were able to develop a sense of competence in project-related procedures.

Conclusion

All of the projects were research oriented, insofar as development of a delivery system can be considered research. While a number of more specific research projects related to the broader goals were identified, these often were assigned low priority. Thus, on the whole, the projects did not produce an impressive harvest of experimental evaluative research.

Ambiguity concerning the nature and goals of research on the projects makes it difficult to judge the quality of research and, thus, we have been content to identify some examples of particular interest and some areas where research is needed. Also, we have outlined a few lessons that seem to have emerged from the

research efforts, particularly the weakness of the experimental design, the need for more routine research, and the need to see research as a means both for project improvement and project advocacy. Finally, it has been noted that some of the best research has been done by foreign consultants, but in many of these cases the consultants have imparted few skills to local personnel.

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Analysis of Project Development

While the six case histories highlight the uniqueness of each national experience, in this chapter, the task is to search for some general principles to account for the divergent experiences. It is possible to think of each of the six cases as following a common cycle. Initially, most imperative was the conduct of field experiments to develop an indigenous prototype. Concurrent with the experiment was the need to carry out research on curriculum, student performance, and costs. As the prototype approached a workable form, the respective project leaders and patrons began the process of persuading those in authority to recommend wider dissemination. Each experiment thus can be viewed in terms of its performance in: (a) developing an experimental prototype; (b) carrying out research on the prototype; and (c) promoting this prototype for wider dissemination.

First I will summarize what has been said in chapters 3–9 about the relative performance of each project in these three respects. Then, reasons why the projects may have developed in their respective ways are suggested. In the simplest terms, the six nations can be viewed as ranging from poor and educationally underdeveloped Bangladesh and Liberia to relatively affluent and educated Malaysia and the Philippines. Into this socioeconomic range of environments was injected a new concept, Project IMPACT. Which environment was most accepting of the new concept? Which was most hostile? Why?

Comparing project development

A useful starting point is a summary of the divergent development of the six projects, bearing in mind that all are still underway. Table 6 summarizes our judgments concerning the differential development of the projects.

Innovativeness refers to the extent to which the delivery system that emerges from the experiment differs from conventional schools. Certainly the Philippines model was most innovative, as it introduced changes in virtually every component listed in Table 6. In contrast, in Malaysia and Jamaica, the major change was in the teaching guides and classroom materials provided to the lower grades of the primary schools.

The cost-saving potential was most evident in those projects that intentionally increased the student–teacher ratio while placing reasonable limits on the production of materials, as in Liberia and the Philippines.

The projects sought to develop a prototype that would result in educational outcomes at least equal to those of the conventional system, if not superior. Jamaica probably failed in this respect, and the results are not yet available for Bangladesh. The remaining projects seem to have achieved the minimal goal, and the children in Liberia and the Philippines may have received a superior education.

Skill transfer to a wide circle of educators outside the project team must occur for a project to have a lasting impact. The process of skill transfer is especially problematic when, as in four of the six cases, foreign technicians are relied on. Of these four cases, the local officials of Liberia were the most outspoken in their concern for indigenous skill development. In the Liberian project, the foreign technical staff assumed an exceptional level of responsibility for many of the developmental activities, and relatively small amounts of resources were devoted to local staff development. For example, only one local staff member was sent overseas for long-term training, although money had been budgeted for several; the courses to teach use of the complicated project materials to poorly trained schoolteachers were initially only 2 weeks' duration. In contrast, in Indonesia, I estimate that at least 10 individuals were sent overseas for long-term training in project-related skills, and the in-service courses to train and retrain teachers in the use of project materials were substantial.

Time to develop the prototype varied modestly as indicated in Table 6.

Table 6. A comparison of the characteristics of the six projects.

Characteristic	Country					
	Philippines	Indonesia	Malaysia	Jamaica	Liberia	Bangladesh
Innovativeness	H	M	L	L	H	M
Cost-saving potential	Yes	No	No	No	Yes	Yes
Educationally equal or superior	Yes	Yes	Yes	No	Yes	?
Skill transfer	H	H	H	M	M	L
Years to complete prototype	3	4	?	4	5	3.5
Institutionalization	L	H	M	None	M	M
Research quantity	H	H	L–M	L	M	L
Research relevance	M	M	M	L	H	L

Note: H, high; M, moderate; L, low.

Degree of institutionalization has two facets: the extent to which public laws relating to schools were modified to accommodate new components of the IMPACT delivery system; and the number of schools that employ some aspect of the IMPACT approach. Only four of the six countries that accepted the experiment are now actively disseminating the results of the experiment. A very rough estimate of the number of schools in these countries using some aspect of IMPACT is as follows: in Indonesia, approximately 200; in Liberia and Malaysia, approximately 40; in Bangladesh, currently 18 but a definite prospect of 300 schools within 3 years; in the Philippines, 12 schools.

As illustrated in Table 5, the greatest volume of IMPACT research took place in the Philippines and Indonesia, the least in Bangladesh. In terms of policy relevance, research seemed to make the greatest difference in Liberia: a qualitative evaluation of project costs in combination with a comparative report on student achievement provided the main rationale for a bold shift toward expansion. In other countries, research had little or no bearing on the decision to expand.

How can we account for these differences? It is my view that the standard approaches for explaining project outcomes do not really fit the IMPACT experience. In the following section I seek, by reviewing these approaches, to derive an integrated framework that combines the best from each. Later, using the framework, I offer several propositions relating national context to project outcomes.

Theoretical background

Organizations and their environment

I would like to emphasize the distinction between the organizations involved in developing and promoting IMPACT and the environments they addressed. While early work in this tradition focused on industrial organizations and their technical environment (Thompson 1967), Meyer and coworkers (1981) highlight the salience of institutional environments for medical, educational, and research organizations. For these organizations, survival is highly associated with consistency in conforming to government rules, employing staff with the appropriate professional credentials, obtaining public approval of their activities from the relevant associations and media, and otherwise conforming to institutional expectations.

In the case of IMPACT, the central Ministry of Education and the educational faculties of universities were key environments influencing project activities. Several of the projects were also sensitive to the expectations of foreign donors. The influence of these institutions is reflected in the characteristics identified in Table 6. While the projects were ostensibly oriented to developing low-cost schools, some national governments saw the projects primarily as a means of skill transfer and both the foreign donors and local universities placed high value on the opportunities provided by the projects for carrying out educational research. In the sections below, other ways in which the project organizations interacted with their environments will be identified.

Administrative theory

Perhaps the most common approach in studies of social development is classical administrative theory. This approach focuses on the administrative structure and resources required to carry out given policies. It highlights problems deriving from ambiguous assignment of responsibility, excessive span of control, and absence of work incentives that are largely internal to a particular administrative bureau. Two major problems arise in applying this approach to IMPACT.

First, in most of the IMPACT cases, much of the activity focused on developing a policy. Starting with the highly simplified notion of reducing per-unit educational costs by relying on new technologies, each nation first carried out an experiment to develop its distinctive prototype, then a strategy was devised for expanding to new schools. Policy was not fixed in the six IMPACT cases, but rather evolved as each project explored the new concept.

Second, in most of the cases, IMPACT was developed by an ad hoc group that enjoyed considerable autonomy from normal administrative channels; the development was not carried out by a government bureau. Many of the project's activities involved tapping new resources and establishing ties with local community leaders who were outside the lines of central bureaucratic authority. Administrative theory, while it highlights the importance of structure, is thus not oriented to the types of structures that evolved in most of the IMPACT cases.

The particular structure acquired by the project groups was significantly influenced by the administrative environment. When a central government played a major role in initiating the project, government bureaus had relatively more influence in project operations; otherwise the projects were located in university campuses or autonomous offices. Also, to the extent foreign donors were concerned with project outcomes, they tended to install a significant component of foreign technical assistance in the project office.

Diffusion of innovations

Work on the diffusion of innovations (Rogers 1962) highlights the importance of looking at the characteristics of IMPACT prototypes, in terms of the objective merits of the prototypes and of the way they are perceived by potential adopters. According to this rational framework, the diffuser must persuade opinion leaders of the merits of the new idea. If the innovation is accepted by opinion leaders, they in turn will persuade others to adopt it. While both the objective and subjective sides of the persuasion process are noted by the diffusion framework, it emphasizes that the objective balance between the costs and benefits of an innovation holds the greatest sway. It observes that consumers or clients, while they may be momentarily swayed by false promises, cannot be deceived forever, and to the extent they feel cheated they will speak forcefully to others in their group, thus causing a backlash against the innovation. On the subjective side, the diffusion approach emphasizes the effective presentation of correct information about the innovation.

In reviewing the IMPACT story, we found that the concept was reformulated in each successive country. In general, it appears that as the more controversial features were abandoned or modified, the new delivery system more easily

gained acceptance. The Philippines attempted the full IMPACT concept, and from early in the fieldwork children began absenting themselves from school and teachers raised objections; in addition, the central Ministry of Education, which had been disappointed by earlier school reform projects, remained cool to IMPACT. However, in Malaysia, where many of the novel aspects were dropped, the new approach proved more enduring. Today teachers are among its strongest supporters.

By focusing on the costs and benefits of innovations, the diffusion framework helps us to understand why innovations have a greater chance when there is little to compare them with. In four of the six countries, the established systems were felt to be reasonably effective. However, in Liberia the rural school system was often described as a vacuum. Similarly, in Bangladesh the rural school system was relatively underdeveloped. In these circumstances, from the point of view of all concerned, anything, even IMPACT, was better than the existing systems.

The diffusion framework has significantly influenced the thinking of many first-world administrators of assistance programs. The first-world popularity of the diffusion framework ironically helps us to understand why research has figured so prominently in the IMPACT story. Research, by creating unambiguous evidence about the performance characteristics of an innovation, was assumed by first-world authorities to have value in the process of rationally persuading opinion leaders of the merits of IMPACT. Thus to the extent international donors participated in the actual execution of projects, as in Indonesia and Liberia, there was considerable research. While the diffusion framework helps to account for the relative incidence of research, it does not shed much light on the conditions under which research actually influenced decisions. As we noted in the introduction, Bangladesh, the most inadequately researched case, has made the greatest progress in institutionalization.

Social networks

Flores (1981) examined the Philippines experience with IMPACT and noted that the diffusion framework is weak on the human, or less obviously rational, factors that influence innovation. He emphasizes the role of social networks in influencing the outcome of innovations. In the initial Naga area, the experiments sought to build a favourable network by seeking the cooperation of the Naga mayor and appointing his wife as education officer. Various other strategic appointments of this kind were made both in the Naga area and at the centre in the effort to promote IMPACT. Similarly in Jamaica, the project was located in the district represented by the Prime Minister's brother in the expectation that this would enhance visibility. The network approach highlights many of the conscious decisions made by project leaders to advance their projects. On the other hand, it does not seem especially helpful in accounting for project success. After all, in Jamaica the Prime Minister changed, and in Naga the mayor could not force the parents to keep their children in the innovative school.

Implementation

More elaborate in highlighting the human and other than completely rational factors that influence project development is the implementation approach (Pressman and Wildavsky 1984; Warwick 1983). This approach recognizes that policies

may not be firmly defined or accepted prior to implementation and, even if they are, many obstacles will emerge as organizations seek to implement these policies. The obstacles to implementation are suggested by the following summary from a study of an American civil rights program (Bailey and Mosher 1968:99).

> When . . . a law unprecedented in scope has to be administered through State and local instrumentalities, on an impossible time schedule, by an understaffed agency in structural turmoil, beset by a deluge of complaints and demands for clarification of the legislation at hand, as well as cognate legislation already on the books; the wonder is not that mistakes are made — the wonder is that the law is implemented at all.

Implementation studies have identified four general conditions that affect the ease of execution: (1) the validity of the theory on which the project is based, (2) the consistency of support of the project by the local leaders and their ability to subordinate external (and international) actors to their plan of action, (3) the complexity of the joint actions between different administrative centres required for execution, and (4) the skill of implementers in what Bardach (1977) refers to as the "implementation game," the negotiations and trade-offs required to motivate others to cooperate in the activity. Each of these conditions proved very relevant in the six cases and thus is discussed extensively below.

Political economy

Recently there has been a renewed interest in theories of political economy. These stress the role of established classes in controlling local and national decision-making, viewing the educational system as a key mechanism for social reproduction (Giroux 1983). Thus, at least in stable societies, changes in the educational system are exceedingly difficult to bring about unless they come from the top. In most of the six case studies, the experimental stage progressed relatively smoothly. However, as project members began to press for wider dissemination, they ran into stiff opposition. Central bureaus refused to compromise on curricular issues, did not release funds for the production of modules, and regulations for the payment of teachers proved unchangeable. Only in Liberia, which had recently experienced a major change of government, did it prove possible to significantly alter the central bureaucratic rules. Whereas the diffusion framework views this bureaucratic obstructionism as somehow unnatural, it is an expected development from the perspective of political economists.

While these experiments did encounter much resistance as they pressed for institutionalization, it was not always the established classes that created the obstacles. In several of the cases, the projects had not objectively proven their superiority over the conventional approach, and they certainly had not demonstrated sufficient superiority to justify abandoning the conventional system. In the Indonesian case, PAMONG was attractive to the extent it showed that it could effectively deal with problems — small schools and education for dropouts — that created difficulty for the conventional system.

The Malaysian case provides an interesting example of the established class of teachers actively supporting the innovation yet facing resistance from the central bureaucracy, which favoured an approach developed by its own Curriculum Development Centre. In a sense, two different components of the establishment differed concerning the most appropriate way to carry out social reproduction. Thus, while several of the educational systems in this study resisted wider

dissemination of the new delivery system, this resistance stemmed from a variety of reasons, the views of the established classes being only one.

Dependence

The world-system or dependence approach (Carnoy 1974; Berman 1979; Arnove 1982) tends to view most developments in third-world countries, including educational innovation, as determined by the initiatives and influence of first-world actors. Certainly in the events we have related here, the international donors loom large. None of the six countries under review asked for IMPACT; rather, each was approached and persuaded to consider an experiment in low-cost education by representatives of either an international or a regional actor. It was often the enthusiasm of international actors that sustained the innovation, even as local actors were withdrawing their support.

The dependence theory, by contrasting the interests of first-world and third-world countries, directs our attention to the question of indigenization more clearly than the earlier approaches. This approach sensitizes analysis about the locus of control, the extent to which technology comes from outside a national context, and the extent to which local actors are able to transform the technology to fit their preferences. This approach also suggests that world actors such as international donors work in consort for the promotion of first-world values and interests.

The analytical framework

Components

In summary, each of the major approaches focuses on an important dimension of the IMPACT story. From these, we have abstracted the following analytical framework to guide the analysis of the correlates of project development.

(1) Organizational components

Project organization: The specificity of project goals and the extent to which the project relies on foreign expertise are of interest.

Locus of the project office: Implementation theory stresses the multiplication of communication problems as increasing numbers of actors become involved in decisions. Diffusion theory notes the greater difficulties of persuasion with increasing physical distance.

Project theory: Both the diffusion and implementation approaches emphasize that some ideas are more easily realizable than others. Diffusion theorists stress the appeal of the idea, while the implementation analysts focus on its soundness.

(2) Environmental components

Administrative context: Special features of the project's environment, such as the extent of educational opportunity, previous experience with educational reforms, and key features of the national educational tradition, relate to the reform.

Availability of resources: Clearly the level of resources allocated for a project has bearing on its outcome.

(3) Bridging components

Consistency of leadership: Clear support of a project at the highest levels of the relevant administrative structures contributes to its prospects. In the best of circumstances, the project's chief patrons continue in their offices for the duration of the project as do those in charge of the day-to-day operation of the project.

"Gamesmanship": Perhaps the most difficult factor to describe but also the one that finally determines the fate of a project is the skill of project members in using the resources available to them in gaining support for the project. Ironically, due to weak "gamesmanship," some of the objectively most impressive projects encountered the greatest resistance.

These are the seven factors to be reviewed as we compare the case histories. The value of this exercise becomes apparent if we can identify relations between these factors and project outcomes.

Project organization

In many developing countries, there tends to be considerable resistance to proposals for multiyear developmental projects. Long-range commitments are difficult and experimental work may be viewed as risky and wasteful of scarce human resources. To minimize the risks, grants from foreign donors were secured to fund most of the IMPACT experiments; included in the budgets of several of the external grants were provisions for the participation of foreign experts. Table 7 summarizes the arrangements made between the respective governments and outside donors with respect to two dimensions: (1) the extent to which project goals were contractually binding, as in Liberia, or open ended, as in the original sites; and (2) the level of foreign technical assistance included in the projects.

Clearly there were substantial differences in the organization of the projects, and these appeared to have some relation to the different outcomes. The following are several inferences with regard to the experimental stage.

The more foreign participation, the more innovative Foreign consultants, not being socialized to local educational customs or subservient to local power bases, approached these projects with fewer constraints. Thus, the Philippine, Indonesian, and Liberian projects, which were staffed by numerous outsiders, tended to develop prototypes that differed from the conventional system in a wider range of components than those staffed exclusively by local people.

Table 7. Mode of sponsorship.

	Level of foreign technical assistance	
Type of contract	High	Low
Open ended	Indonesia Philippines	Malaysia Jamaica
Closed	Liberia Bangladesh	

The more open ended, the more innovative The first two projects, in the Philippines and Indonesia, faced few external constraints in terms of expectations or deadlines and thus seemed to develop prototypes that differed from the conventional delivery system in the widest variety of components. The grants or contracts of later projects tended to be more specific in terms of goals; thus, in most cases, the prototypes tended to be less innovative overall, although they did achieve exceptional results in a narrower range of components. For example, the Malaysian project developed curriculum materials of exceptionally high quality and the Jamaican project developed a new approach to classroom management.

The more foreign participation, the greater the cost-saving potential The international supporters of Project IMPACT were more concerned with educational costs than were local educators, who, as in the Indonesian case, felt that per-student costs were too small. In several of the projects, the international supporters translated the cost-saving concern into a contract condition.

The more open ended, the longer it takes to complete the experiment One might assume that those projects in which the contracts specified clear goals and timetables might have been completed most rapidly, but this does not seem to have been the case. The goals seemed clearest in the Liberian case, yet it took 5 years to complete the prototype. An entire year was lost, due partly to political instability and partly to project difficulties; the funding agent accepted the project's explanation and granted an extension. The goals were relatively specific in the Bangladesh case and the prototype was developed quickly. But again this was primarily due to external pressure from local officials who were anxious for results and pushed the project team to exceed the schedule in the contract. Looking at these two cases, we see how the time schedules of even the most detailed contracts are negotiable. While projects with detailed contracts were no more efficient in developing a prototype, they did seem to demonstrate greater efficiency in certain of the subprocesses of the project. For example, the Liberian experiment developed the most efficient process for printing, boxing, and distributing materials.

The more foreign participation, the more research Foreigners attracted to these projects also have to worry about their professional reputations, and one way to advance these is through research and publication. Thus it would seem plausible that projects staffed by numerous outsiders might be more research oriented. Indeed, the three projects that had the most foreigners did produce relatively more research. On the other hand, Malaysia's InSPIRE, which had no foreign staff, is beginning to catch up in this respect. What seems as important as the nationality of staff is the nature of their professional identity and the availability of a university setting to carry out and write up research findings. The Bangladesh project, which has no research staff and no ties with a university, has yet to publish a research report.

The less foreign participation, the greater the chance of moving toward institutionalization It can be argued that projects extensively staffed by foreigners are more likely to seek close ties with international donor agencies and to look to foreign audiences for recognition, while the converse is true for projects staffed from within the country. In the Philippines, the international friends of the project were more effectively courted than the local power brokers, but the former were impotent when the project bid for institutionalization. In contrast, Malaysia had no

foreign staff yet it proved to be exceptionally adroit in coping with a complicated local political situation and it has made major strides toward institutionalization.

However, other cases do not so readily fit this generalization. Jamaica had no foreigners but failed to attract local interest. In contrast, although the Indonesian project employed many foreigners, their roles were generally restricted to technical work, while the Indonesian managers conducted the political work necessary for advancing on the road to institutionalization. More important than the composition of a team are the roles assumed by the various members and their performance in these roles.

Locus of the project office

Another important factor influencing progress toward institutionalization was the set of relations that evolved between the project leaders and the relevant authorities. One dimension along which projects varied was the number of bureaucratic levels between project directors and the Minister of Education. A second dimension was the physical location of the project office: in the Philippines, Indonesia, and Malaysia, the office was located on a university campus, ostensibly to take advantage of the intellectual resources there; in Jamaica, it was located at least partially within an official government building; while in Liberia the office was located in an isolated rural outpost.

The locus of the office had two major consequences. The first is what Pressman and Wildavsky (1984) have described as the complexity of joint action. Project officers situated outside of government had more levels to work through to get things done than did those with formal authority. For example, in the Philippines, the project director lacked the formal authority to discipline project teachers (who were public officials); this lack of authority posed a problem. Also, as the Philippines had the most decentralized government among the six cases, the complexity of joint action was greatest. The full chain of command included the project director, the local education supervisor, the governor, the central government's office of primary education, and finally the Minister of Education. The chain of command was nearly as complex in Malaysia and Indonesia; while the bureaucratic chain was not as long, the priorities of foreign donors in the case of Indonesia and of the Sabah Foundation in the case of Malaysia added a different dimension to the complexity. In contrast, in Jamaica, Liberia, and even Bangladesh, the project director had direct access to the head of primary education and, through that office, to the Minister. To the extent this chain of command was abbreviated, the projects found it easier to get things done.

Given the limited communications systems in the six societies and a preference for face-to-face meetings, the site of project offices also influenced communications. In Liberia, where the only link between the project office and the central ministry was a rapidly deteriorating road, communication was especially difficult resulting in frequent distortions of project performance by central authorities. Similarly, the location of the Philippine project in Cebu, 2 hours by plane from Manila, meant that the project was often out of sight and thus also out of mind for central government officials. In contrast, in Jamaica and Bangladesh where the project office was located in the national capital, the possibilities for communication were relatively good.

The locus of the project office also proved to be the key factor influencing local skill development. In those projects with offices situated in universities, the commitment to indigenous training was greatest. Also, to the extent the project was attempting to realize fixed contractual goals, the project's managers were reluctant to send good local staff elsewhere for extended periods of training, fearing this would defeat the immediate purpose of completing the project.

Finally, the locus of the project office was related to research productivity. In general, for those projects that maintained an affiliation with universities, more research was conducted and published than for those at other locations. Indonesia's PAMONG, which appeared to produce the most research, not only had its office on a university campus but also utilized academic staff to write modules, provide training, and carry out most other project activities. Similarly, the highly productive Philippines project maintained ties with a local university. Yet in Malaysia, although the project was on a university campus and utilized academic staff, it soon became heavily embroiled in national politics as well as in the task of revising materials to respond to the centrally prescribed curriculum reform, leaving little time for research. Since 1984, the situation has become more stable, and research activities have resumed.

Project theory

No matter how impressive a project's organization and political skill, its success according to Pressman and Wildavsky (1984) ultimately hinges on the soundness of the ideas inspiring the project, that is, its theory. Is the project addressing a real problem? Has it developed an adequate solution? Has it identified a feasible strategy for introducing this solution?

At the beginning of the IMPACT project, there was no clear theory. Rather, the experimental stage was to develop a theory and, at this early stage, the theory was a dependent variable. Toward the end of each experiment, a prototype for a new educational delivery system was described along with proposals for further dissemination. At that point, the theory became an independent variable influencing further project development.

All of the prototypes had weaknesses. In the case of the Philippines, it might be said that the prototype was too innovative to gain wide acceptance; however, in most cases, the theory reasonably reflected local conditions. In three cases, the projects developed far more classroom materials than could practically be provided to schools on a mass basis. However, most of these rough spots in the prototypes eventually were ironed out.

The soundness of an educational innovation cannot be determined independent of the institutional environment into which it will be introduced. In contexts where intellectuals are judges, research is important. Where central bureaucracies are involved, theory must address government regulations on such matters as teacher certification, salaries, and textbook development. Or, if local school systems are the potential adopters, soundness will be enhanced by consideration of the benefits to local communities.

The most consistent weakness in the IMPACT theories was their neglect of detailed attention to the concerns of critical institutional environments. In the early experiments, this weakness was especially evident. The Philippines project,

though it speedily developed an innovative experiment and documented the prototype's value with extensive research, made little progress toward institutionalization. In contrast, the modifications in the Malaysian and Bangladesh prototypes were less varied and relatively little research was completed, yet these prototypes met with an enthusiastic local reaction. In the Philippines, at least part of the problem was the lack of planning devoted to dissemination. By the time the experiment reached Bangladesh, the legacy of the perceived successes in other countries seemed to be sufficient to sell the school to local audiences, and thus a special strategy was no longer required.

Administrative context

Common to all six countries was the recent completion of a major educational review or sector study that heightened the internal disposition for change. These studies emphasized the weakness of primary-level education and, in view of demographic projections for a rapid increase in the size of the primary-school cohort, the likelihood of increasingly complex problems. In each country, the search for solutions to improve primary education led to contact with members of the international network of individuals who had some experience with the IMPACT concept. Thus the IMPACT idea was communicated in a timely fashion.

In each country there were distinctive features of the educational environment that shaped the reaction to IMPACT. In the Philippines, as primary education was just returning to the policy focus, other programs were being started that competed with IMPACT. In Indonesia, after decades of financial difficulty, the government was entering a time of plenty due to oil revenues. Soon after the project's initiation, the priority was shifted from reducing educational costs to serving the educational needs of school dropouts. The central bureaucracy's protection of the existing formal educational tradition was an outstanding feature of the Malaysian situation, and any long-term change would have to accommodate this reality. In Jamaica, the experiment began at a time when the nation was experiencing considerable social and economic turmoil; when the turmoil finally led to economic crisis and a change of government, the project had major adjustment problems. In Liberia, there were many very small rural schools having virtually no facilities and poorly trained teachers. The low quality of the conventional system invited a successful alternative such as IEL. But again a major change of government occurred during the project. Finally, in Bangladesh the educational system had only recently been nationalized and was extremely short of resources of all kinds, including the official apparatus to develop an experimental project. However, in terms of the objective characteristics of high population density and a relative underdevelopment of the conventional system, there was space for IMPACT to prosper.

Availability of resources

The availability of both financial and human resources can influence the outcome of projects. Concerning financial resources, the total amount forthcoming had an obvious bearing on progress toward institutionalization. In the Philippines and Jamaica, the national government's financial commitments and the supply of external funds ceased at the end of the experimental stage. In contrast, in the four other cases where progress has been made toward institutionalization,

funds continued to be provided by both the national government and external sources.

Often a shortage of funds is only a sign of deeper problems. Funds were cut off in the two aborted cases partly because of major changes in the national economies. While Liberia faced a similar untimely economical reversal, funds continued to trickle out to the project, and ultimately the project regained momentum. Only in Indonesia and Malaysia were the projects more or less continuously blessed with a reasonable level of financial support.

In the Philippines, the project ultimately demonstrated to the satisfaction of most observers that it could deliver satisfactory education at much reduced cost, providing that central rules for the distribution of funds could be altered in two respects: federal funds for textbooks could also be used to produce instructional modules; and a portion of the implicit savings achieved by increasing the student–teacher ratio could be used by schools to buy certain supplementary materials, hire tutors, and provide a special incentive pay to staff. Unfortunately, the central government proved unwilling to implement these two modifications; thus the full potential of available financial resources was never unlocked.

Human resources were also a factor. While Jamaica is a highly educated society, the project experienced difficulty in recruiting and maintaining qualified staff; educated people preferred to work in the cities or even overseas rather than take up the insecure and modestly rewarded positions offered by the project. In contrast to Jamaica, the general level of education in Liberia is much lower, but the project was able to recruit and retain qualified staff due to the combination of a depressed national economy with high unemployment among the educated and the attractive monetary incentives offered to project members. Liberia's staffing problem lay primarily in retaining capable foreign advisers. In the other projects, staffing did not pose a major problem.

Consistency of leadership

The facts concerning consistency of leadership in the various projects are summarized in Table 8. Jamaica was most severely affected by leadership changes at all levels except that of project head, and these changes seemed related to the apparent tendency of the government to ignore the project. Bangladesh and

Table 8. Consistency of leadership

Office	Philippines	Indonesia	Malaysia	Jamaica	Liberia	Bangladesh
Prime minister	C	C	2	2	2	2
Minister of education	3	3	2	3	2	2
Centre liaison officer	2	C	2	3	C	2
Technical assistance	T	T	NA	NA	T	T
Project director	C	T	3	C	C	C
Staff	T	C	C	T	C	C

Notes: C, same individual(s) in the office for the duration of the project; 1, 2, 3, number of changes of office during the project; T, changes in individual(s) that cannot be summarized within the previous categories; NA, not applicable in the particular national experience.

Liberia experienced dramatic changes in the top levels of government, but, in contrast with Jamaica, these occurred only once. Despite the changes in these two countries, key people within the respective Ministries of Education and in the international donor community persisted in their support of the projects. Their perseverance along with consistency at lower levels in the projects was important in advancing the course of institutionalization.

Foreign technical consultants were the most unstable members of the several projects, but in most cases their mobility did not adversely affect the projects' progress toward institutionalization.

"Gamesmanship"

"Gamesmanship" can be defined as skill in negotiating and winning others over in the face of delays or unanticipated opposition to the implementation of a program. It is essentially a spontaneous skill mobilized in reaction to unanticipated situations. "Gamesmanship" was certainly crucial in the advancement of the IMPACT projects.

The original INNOTECH group devoted little thought to external reactions, assuming that the merits of a well researched experiment would speak for themselves. The naivety of this thinking was quickly exposed. In the first experiments, some of the most threatening early problems stemmed from adverse community reaction. In the Philippines, a rumour spread that the new school was elitist and neglected the ordinary student; many children left the experimental school to join an ordinary school. While the project team was able to overcome this temporary setback, they quickly realized the importance of maintaining close contact with the local community. Thereafter, they exerted a special effort to establish clear communication with parents. As quickly as they could, they prepared data to refute the local rumours.

This early incident proved a useful warning to later projects, with the result that most devoted extra attention to anticipating community reactions. One important tactic evident in Indonesia and Bangladesh was the early provision to the community of a valuable good — respectively, a grant to start a community savings and loan association and the construction of new school buildings. These acts indicated the projects' intention to benefit the community and established a favourable climate for the time-consuming process of introducing the prototype. Surprisingly, the need to develop approaches to reassure recipients and to counter potentially destructive rumours is neglected in much of the available implementation literature.

Toward the end of the experimental stage, all of the projects faced the challenge of convincing those higher in the government that the experimental prototypes should be introduced in an expanded and regionally more diverse set of schools. To succeed in the drive for institutionalization, a different form of "gamesmanship" was crucial. Seemingly attractive approaches were developed in several of the countries. In the Philippines, key national education officials were invited, along with the chief educational officers of each province, to a workshop of several days' duration. Similarly, in Indonesia several national workshops were convened, and in addition key central government officials who favoured the project made a number of visits to the offices of interested governors. But in only four countries did these approaches lead to some level of success. Given the

numerous other factors involved, it would be imprudent to attribute the successes to skillful "gamesmanship" or the failures to poor "gamesmanship," but clearly there are differences that deserve mention.

In the Philippines, the project's achievements in bringing together important national and local educational leaders was impressive, but the project leaders failed to appreciate that the key problem lay elsewhere. Without basic changes in the regulations affecting funding, IMPACT had little chance for wider dissemination. These regulations were the province of the Ministry of Finance. While persuading educational leaders, the project also needed to persuade the Ministry of Finance.

Malaysia's InSPIRE certainly encountered the most complicated local situation, and the project was ultimately able to prevail. One apparent factor was the manipulation of public opinion by providing tantalizing information about the project's achievements to the press. While the project was favourably reported by the press and these reports hampered the style of project opponents, the project leaders deny that they cultivated or tried to use the press. A second factor that seems to have been crucial was the skill of supporting universities in bringing about overt changes in project strategy at critical points. Especially significant were the two instances when project leaders, who had run into conflict with central government leaders, were replaced by new faces who worked to reduce the prevailing tensions. In this way, the project managed to move forward.

In both Liberia and Bangladesh, the most important factor in the progress of the project appeared to be the keen interest of the international donors. In Liberia, this led the donor to commission a second evaluation; once some favourable results were obtained from the reevaluation, the donor persuaded the local government to seek additional funds for a further round. While the actions of the donor were less visible in the Bangladesh case, the donor's known preference for the project certainly had an important influence. After all other factors are considered, it finally is necessary to accord due importance to the particular tactics used by personnel to advance the project's position.

Conclusion

In this chapter I constructed and applied a framework to account for the differential outcomes of the projects. I have phrased the discussion in this chapter in highly tentative terms, as there are towering methodological problems involved in attempting comparisons or drawing causal inferences from the data collected in our relatively brief field studies. Nevertheless, a number of suggestive propositions emerged concerning the relationships among the factors enumerated in the framework and project outcomes.

11

Lessons from IMPACT

What have we learned from this review that might be useful both for other nations considering IMPACT and for the international donors that might seek to assist their efforts? In this chapter, 26 lessons are presented and discussed, grouped into sections concerning: (a) the value of IMPACT itself, (b) the role of donors, (c) the role of project planners, (d) the role of host governments, (e) the process of institutionalization, and (f) the roles of researchers and those who fund research. While these lessons are derived from the case studies of IMPACT, they may stimulate productive rethinking of the strategies used in other efforts at educational innovation in developing countries.

Value of IMPACT

1. IMPACT can improve the quality of education with no increase in cost in rapidly growing, densely populated areas where trained teachers are scarce. While the original IMPACT rationale specified these conditions, ironically they were not encountered until the sixth case, Bangladesh. There IMPACT has met with quick acceptance and is destined to play an important role in the expansion of primary education. IMPACT's programed instruction enables a teacher, even one with a low level of formal training, to effectively teach between 50 and 100 children. Time-on-task and student satisfaction tend to be high at IMPACT schools, as are attendance and retention rates.

2. IMPACT can be effective in sparsely populated areas that are poorly served by the conventional educational system. In Southeast Asia, IMPACT's greatest early success was in central Kalimantan and Sabah, island provinces of Indonesia and Malaysia, respectively, where typically one teacher is responsible

for 50–100 children working across all six grades of the conventional primary-school curriculum. Teachers in these small schools experienced great difficulty in using the texts and materials authorized by the conventional curriculum and welcomed the IMPACT materials that provided more detailed instructional guides and more extensive classroom materials such as student workbooks and self-instructional programed modules. Similarly, in Liberia, it is apparent that the IMPACT-related materials are proving advantageous in sparsely populated areas where teachers often have to teach several grade levels.

3. IMPACT can supplement and enrich mainstream education. In many developing countries, the official curriculum only authorizes texts, whereas teachers, who usually have heavy workloads, seek information on how to organize their instruction and on materials to give to their pupils for classroom work. Especially in peninsular Malaysia, IMPACT's main value has been in providing a model for the development of instructional guides, classroom teaching aids and worksheets, and supplementary remedial and enrichment materials.

Role of donors

4. International donors should seek a middle road between doing too much and too little to promote their projects. The international actors played an immensely important role in advancing IMPACT. In most cases this role was benign, providing appropriate information when it was sought and reacting when local requests for support were issued. However, there were cases of a more coercive, "take it or leave it" approach that left a bad feeling and nearly jeopardized one experiment.

Just as overinvolvement by an international actor can jeopardize a project's success, so can underinvolvement. For example, once it funds a project, IDRC entrusts full authority for execution to project managers with minimal monitoring of progress. Especially in complex projects such as IMPACT where local project leaders have little prior experience with the key components, a more involved donor role may be appropriate.

5. Extensive foreign technical assistance may result in insufficient indigenous involvement. Insofar as donors or their foreign contractors seek to run the experiment from outside and with extensive foreign technical assistance, they run the risk of failing to generate local commitment and competence, leaving the project to wither when external funding ends. The rationale for a strong foreign component is the promotion of quality, but the quality achieved may not be as appropriate for the local context as in a project largely run by locals. In any case, management from a distance does not build local commitment, so the prudent strategy may be to work more for internal relevance and involvement than for quality by foreign standards.

6. Donors who start development projects should feel some responsibility for next steps. IDRC, which provided the funds to support the first experiments, assumed that it would sponsor the early germination of the seed and then let others take over. The case studies of IMPACT raise a number of important questions about this strategy.

How long does it take for an educational seed to germinate? IDRC thought 3 years were sufficient, but 5 might be more accurate. Given the complexity of

educational experiments, it has to be asked whether it is enough to simply see a project through the development of a prototype. Much of the important work in IMPACT came after the first stage.

If it is assumed that others will take over, shouldn't special provisions be built into the experiment to gain their involvement? In at least two of the projects, "others" were officials of the host government, yet government personnel and local institutions were not significantly involved in the experiment. Because they were not involved, they viewed the project as foreign, as someone else's clever idea, and were not inclined to seek its adoption.

When the "others" are donors, it is important to appreciate the growing independence of donors. In earlier years, there was a greater degree of collaboration between donors based on distinctions such as regarding Ford and IDRC as idea-donors versus AID and the World Bank as doer-donors. These distinctions are now becoming blurred, as doers seem to have more of their own ideas, and are less interested in receiving the baton. So the strategy of pulling out and letting others take over may mean that no one takes over.

7. The conditions for starting a major educational innovation on the scale of IMPACT may have disappeared. INNOTECH, presumably because of staffing and budgetary constraints, has not been able to follow up IMPACT with additional bold new concepts. In surveying the third world it is difficult to identify other institutions that specialize in developing innovative educational approaches. In part, this is because of a shift in educational development thinking during the 70s away from innovation toward implementation and evaluation of projects. The shift was partly due to a feeling that too many new ideas were being started and too few institutionalized. The irony is that the shift effectively cut off the generation of new ideas. Is it now time to redress the balance?

Role of project planners

8. All projects seem to encounter unexpected obstacles. IMPACT was introduced in the countries under consideration as a new project. Thus, a project document was prepared in each case, outlining goals, personnel, schedules, and likely constraints. Perhaps to gain approval from some higher level, these project documents were cast in an optimistic, "all will go well" language. When we examine the contexts and histories of these projects, we find an astounding sequence of unexpecteds: major political changes; major changes in basic educational policy and curriculum; devaluations of currency resulting in escalating costs for key inputs such as paper, petrol, and staff salaries; difficulty in recruiting and retaining professional personnel; and breakdown of equipment. These disjunctures are to be expected in the developing world. While project planners may not be able to anticipate the particular difficulties that will befall their projects, they must build in enough flexibility to cope with the unusual.

9. In each country, the IMPACT concept was significantly modified to accommodate local imperatives. It was originally assumed, since the IMPACT concept had been created by a regional organization that had representatives from each of the Southeast Asian countries, that it would be accepted intact by the receiving countries. Yet the Philippines and Indonesia began to modify the concept from the very beginning to adapt it to local conditions. Similarly, there was an expectation

that subsequent IMPACT adopters could save time and expense through wholesale borrowing from the initial experiments, even down to utilizing the modules and other instructional materials. In reality, the project began in each new setting essentially from zero in devising strategies and writing instructional materials.

10. The international accumulation of experience did not substantially accelerate the development rate of later projects. Later projects did benefit from the human and intellectual capital amassed by earlier projects, but this did not significantly shorten the time needed to develop a system appropriate for local conditions. Regardless of when a project began, approximately 4 years were required to develop a viable system.

11. Most projects departed from their original low-cost focus. IMPACT's original intent was to reduce substantially the cost of delivering quality education. This goal was achieved only in the Philippines and Liberia. We have reviewed various political and bureaucratic obstacles external to the project that frustrated cost reduction. However, once the projects began, the respective teams turned to developing the various components with little regard for how these might be reproduced or how much they would cost. It was only after the Liberian and Indonesian projects had been in operation for several years that their leaders seriously examined costs, and in these cases only following criticism from outsiders. In both instances, the cost analysis revealed that the proposed delivery systems required far too much paper to be economical. In Jamaica, the project team apparently thought that merely borrowing certain components of the Philippine approach would lead to cost reductions, while not appreciating that increases in the student–teacher ratio and a judicious control on the volume of materials were the keys to greater efficiency. It is clear that an ongoing mechanism should have been built into each of these projects to assess the cost implications of each project decision.

Role of host governments

12. Without basic changes in budgetary regulations, IMPACT's savings are implicit rather than explicit. Most of the countries in this study have budgetary processes in which the central ministry pays for texts, teacher salaries, and other school expenses, first at the district level and then at the school level. These budgetary categories do not respond to changes at a particular school, for all schools are assumed to be structured in an identical way. If a school proposes to reallocate funds by reducing the number of teachers to acquire more classroom materials and instructional guides, the normal budgetary process cannot accommodate this change. At the school level, the money is not transferable from one category to another. Similarly, if a school decides to reduce its teaching force by half and to use a portion of the saved teacher salaries to hire teacher aides, it will find that the budgetary process will not allow the reallocation. In the IMPACT experiment, if reallocations had been possible, the schools might have been able to deliver better education at lower cost. But as IMPACT was an experiment, it was premature to effect the reallocations.

This problem was not serious at the beginning, but when IMPACT moved beyond the experimental stage and these budgetary regulations still had not been altered, it proved impossible for individual schools to translate their implicit

savings into the funds needed to finance special costs such as teacher honoraria, teacher aide salaries, and the purchase of modules and worksheets. It is not altogether clear why governments failed to develop special budgetary provisions for the IMPACT schools, but this seemed to reduce the potential of IMPACT.

13. IMPACT schools require closer supervision than conventional schools. Far more than in conventional schools, the parts of an IMPACT system are interrelated. A shortage of modules, the failure of a teacher to follow the detailed procedures outlined in the modules, wide disparities in the pacing of students, and inadequate communication with parents can all lead to a breakdown in the system. Moreover, especially in the early stages of a school's adoption of the IMPACT system, teachers require frequent reinforcement as they practice their new roles. In most of the experiments, the schools received extensive supervision from the project office, but in planning the implementation phase, the question of how to organize an appropriate supervisory system or even an initial training session for teachers was inadequately addressed.

14. IMPACT may be more acceptable in modern than in traditional communities. Experiments such as IMPACT depend on acceptance by the communities where they are introduced. Especially in the Philippines, the IMPACT researchers appreciated this. Still, it is apparent that some communities welcomed their intervention more than others. It would appear that newer communities, that had not developed tight-knit neighbourhood groups and where parents were better educated, were most open to IMPACT. Another key factor in community acceptance was the level of commitment and support from local leadership. The characteristics of communities most open to educational innovations is a neglected area of research.

Process of institutionalization

15. INNOTECH's original approach was politically naive. It focused only on the technical aspects of developing a new delivery system, assuming that decision-makers would use the rational criteria of cost and educational benefit in judging the results. But the criteria for making policy decisions are much more complex, involving the pressure of unions, the weight of competing programs, the belief in conventional teacher-centred methods, and recognition of the enormous difficulty in changing things that involve decisions spanning several ministries and levels of government. Do innovators appreciate this complexity? Can they develop strategies for dealing with it? Their efforts may be assisted by on-site policy research.

16. There may be a need to experiment with strategies for introducing new delivery systems to local communities and teacher organizations. Many of those involved with IMPACT feel that communities and teachers have difficulty in accepting too much change at once. A diffusion strategy deserving consideration is the incremental introduction of components. For example, it was suggested in the Philippines that a community might be reluctant to see student–teacher ratios zoom up to 150 to 1 overnight, and teachers also might resist. But if both sides could be persuaded to enter into a contract to monitor student progress as the ratio increased, and if the salary savings from the increase could be converted into improved salaries for the teachers executing the change, greater acceptability might be achieved. Other strategies involving different combinations of top-down and bottom-up elements can be considered.

17. A project should not promise something it cannot deliver. In both Jamaica and Bangladesh, initial community interest in IMPACT was stimulated, at least in part, by the promise of new or improved school buildings. However, the construction of these buildings, which depended on action by other government offices, never transpired. When promises were not delivered within approximately 8 months, the communities' interest in the project diminished.

18. Promising extra pay for project participation may create undesirable problems. In several of the projects, instructional supervisors or teachers were promised an honorarium to compensate for the extra work entailed in the project. Once such a promise is made, it haunts the innovation process. If the teachers in the experiment do not get the honorarium, they are unhappy. If project funds can be found to pay the honorarium, then word will spread that IMPACT teachers receive an honorarium. Once the innovation is ready for wider diffusion, teachers at the new schools will expect the same. The government may resist the idea of giving an honorarium to IMPACT teachers out of fear that others will ask for it.

19. Teachers may be more open to changes that do not ask them to do more than before. Teachers in most of the cases were initially open to the change, but over the long term, the project teams had to recognize that teachers in the experimental schools compare their conditions with teachers in conventional schools. They will resist if they find they are asked to do more for the same pay. The reward of seeing students learn more is not enough, and in any case the improvements in learning are not as obvious to teachers as to project officers. Paying project teachers more may not be wise for, in the subsequent implementation stage, it may be difficult to find a source for the incentive pay. The best solution may be to develop a delivery system that requires no more work of teachers than the conventional system.

20. Failure to develop a process for the timely production and distribution of modules and other materials may seriously erode a project's reputation. In the early stages, this failure is usually because of slowness in module writing. In later stages, it is usually because amateur managers are straining equipment meant for small-scale production to the limit, and the equipment is breaking down. Funds or personnel may be inadequate for delivering modules over the often considerable distances. From an early stage, it is important to think these problems through. This may mean purchasing expensive equipment and selecting individuals who by temperament and training are especially qualified for these tasks.

Role of researchers and those who fund research

21. Regional educators still lack basic information on the demographic and socioeconomic parameters of educational systems. INNOTECH's bold generalizations about a shortage of trained teachers to educate a rapidly expanding school-age population were not always accurate. Indeed, in several Southeast Asian countries, there is now a surplus of trained teachers, and in selected rural areas the school-age population is actually decreasing. Basic knowledge of the educational environment has significantly improved since the early days of INNOTECH. However, this knowledge is still not widely shared, nor do we have good projections of the future of educational environments.

22. The joint goals of developing a system and carrying out experimental research may result in a confused research agenda. The projects tended to start from scratch and develop their materials and organizational routines by trial and error. Thus, what was to occur in the project classrooms underwent constant change. Nevertheless, from an early stage the projects introduced an experimental research design that assumed essential stability of treatment both in the experimental and in the control classrooms. In none of the projects were these requirements adequately realized; hence, little of the research on cognitive achievement was credible. In chapter 9, I indicated several reasons why it may be best to abandon the traditional experimental design when evaluating projects of this kind. A preferable evaluation might focus on the gains specifically realized in the project schools.

23. The assessment of educational costs should take account of the relative difficulty of delivering education to different settings. In most instances, these projects were attempting to deliver education to that portion of the national population that the conventional system had been unable to serve — the poor who live in isolated rural areas. Thus the projects were asked to accomplish a more difficult educational task than that faced by the conventional system, yet at less cost. A fairer comparison would be possible if procedures were devised to adjust for these special conditions when evaluating cost.

24. Much of the formal research conducted for these projects did not contribute to decision-making. The IMPACT experience was supposed to be accompanied by extensive research. Indeed, some was accomplished, and this helps us understand the role of research. Much of it was inconclusive, unrelated to anything useful about the projects, and too lengthy.

Most of the formal research on the quality of modules proved too complex and time consuming, and hence was not used. In general, experiments relied on more informal methods.

Research on classroom interaction did not yield clear results, often because objectives were unclear. The exception was one ethnographic study in Jamaica that was very provocative and insightful.

Positive signs from quantitative research on the cognitive and effective outcomes of the experiments were usually given emphasis, while negative signs were downplayed or ignored. In any case, this research typically was completed long after more subjective decisions had been made on the value of the project.

Cost analysis tended to be based on hypothetical assumptions that would not necessarily materialize. But overall the research was thoughtful and provided some of the strongest evidence in support of IMPACT.

25. Simple research based on routine school statistics needs to be encouraged. It is important to recognize that schools in the normal course of their operations generate a mass of routine data that may be useful in understanding what is happening, may be inexpensive to collect and analyze, and may be available on a more timely basis. For example, schools routinely keep attendance records. Our impression is that attendance at IMPACT schools was in most instances higher than in nearby control schools. Dropout levels also seemed lower at IMPACT schools. Moreover, at several of the experimental sites, as long as IMPACT schools were continuously provided with the necessary inputs, children

voted with their feet, and IMPACT enrollments increased while enrollments at nearby schools decreased. However, once modules were depleted at IMPACT schools, as in Naga, children went elsewhere.

A second valuable source of data is the scores children report from their end-of-section or end-of-module tests. In Indonesia, these scores were written on master sheets by the students. A simple review of these sheets from several schools could provide valuable insights about the difficulty of particular lessons, eliminating the need for independent tests for that purpose. Also, teachers and researchers carefully studying the scores could gain a clear sense of the spread in achievement of their students as a basis for planning remedial and enrichment work.

26. IMPACT delivery systems may promote excessive within-school variation in student achievement and personality development. IMPACT projects also need to ask who benefits from the new system. In most cases, there are tests to show that the mean test scores for IMPACT graduates are at least as high as in conventional schools. Also, in two cases there is evidence that IMPACT graduates are more likely, on the average, to have desirable values and attitudes. But these average scores may hide a disturbing skew in the distribution. For example, in the Philippines as well as in at least two of the countries with a British tradition, students are streamed so that some finish more quickly or learn more than others. They bring the average up and do well in the competitive entrance tests for the next-level schools and so contribute to the IMPACT reputation. But other students do not do so well and their parents resent it. Even in the Indonesian case, which seems so equitable, a small proportion of the older students take responsibility for programed tutoring and obtain the confidence and personal skills that come from teaching younger children, while the peers of this select group are deprived of the socializing experiences associated with programed teaching. In sum, IMPACT was intended to promote equity through the wider diffusion of education, yet it probably tends to foster noticeable inequities within schools. Are the levels tolerable, or is this an area for concern?

Concluding observations

Few educational innovations have gone so far, proved so adaptable, affected so many people in so many positive ways, and proved as enduring as IMPACT. IDRC funded the early years of this innovation and deserves a solid vote of appreciation for facilitating IMPACT's birth. While a skeptic at first, I am now a convert to the need for international donors to support the development of new educational innovations. The IMPACT experience has fostered a rich network of third-world professional friendships, provided a considerable stimulus to educational thinking in the respective countries, and in at least four of the six countries left a permanent mark on primary education. There does seem great value in promoting new IMPACT-like experiments to attack pressing problems that seem intractable under the conventional system. Only through international cooperation in work on new concepts will educators duplicate the achievements of IMPACT.

The educational world can identify a number of analogous problems, such as the employability of school graduates, the promotion of moral education, or the

retraining of teachers. Who in the donor world or in the recipient world is encouraging innovations for responding to these problems? Over the course of the IMPACT story, IDRC has gradually shifted its focus from large-scale expenditures on a small number of development projects toward smaller expenditures on a larger number of research studies. In the mid-70s, when many other donors were emphasizing development, this shift made good sense. It is my personal concern that today there is a relative shortage of development efforts. Are donor agencies conscious of the extent of this shift away from developing new educational strategies? It is my belief that the time has come for new initiatives from the donor world to kindle educational innovation.

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Acronyms and Abbreviations

AIR, American Institutes for Research
BPP, Badan Pengembangan Pendidikan (Centre for Educational Development), Indonesia
BP3K, Badan Penelitian dan Pengembangan Pendidikan dan Kebudayaan (Centre of Educational and Cultural Research and Development), Indonesia
CDC, Curriculum Development Centre of the Malaysian Ministry of Education
EDPITAF, Educational Projects Implementation Task Force, the Philippines
GNP, gross national product
IDRC, International Development Research Centre
IEL, Improved Efficiency for Learning, Liberia
IIR, Institute for International Research
IKIP, Institut Keguruan dan Ilmu Pendidikan, Indonesia
IMPACT, Instructional Management by Parents, Community, and Teachers
INNOTECH, Regional Centre for Educational Innovation and Technology
InSPIRE, Integrated System of Programed Instruction for Rural Environment, Malaysia
KBSR, Kurikulum Baru Sekolah Rendah, new curriculum introduced in Indonesia in 1983
PAMONG, Pendidikan Anak oleh Masyarakat, Orang tua Murid, dan Guru, Indonesian translation of IMPACT
PRIMER, Project for Reshaping and Improving Management of Educational Resources, Jamaica
SEAMEO, Southeast Asian Ministers of Education Organization
SEAMES, South-East Asian Minister of Education Secretariat
SEATO, South-East Asia Treaty Organization
Unesco, United Nations Educational, Scientific and Cultural Organization
UNICEF, United Nations Children's Fund
USAID, United States Agency for International Development
USM, Universiti Sains Malaysia
UWI, University of the West Indies
WAEC, West African Examinations Council

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